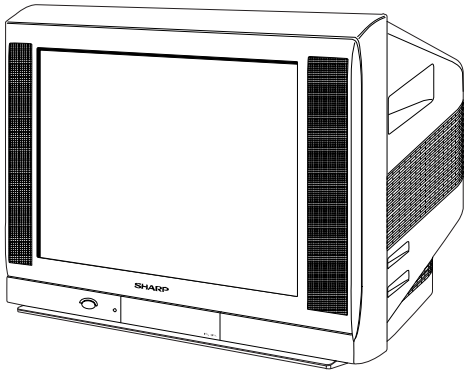
SHARP SERVICE MANUAL



COLOR TELEVISION

Chassis No. GA-2

MODELS 20F630 CU20F630

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

CONTENTS

Page

- ELECTRICAL SPECIFICATIONS 1
- IMPORTANT SERVICE SAFETY PRECAUTION 2
- LOCATION OF USER'S CONTROL 6
- INSTALLATION AND SERVICE INSTRUCTIONS 7
- SERVICE MODE 8
- ADJUSTMENT METHOD 13
- CHASSIS LAYOUT 28
- BLOCK DIAGRAM 30
- DESCRIPTION OF SCHEMATIC DIAGRAM 40
- WAVEFORMS 41
- SCHEMATIC DIAGRAMS 42
- PRINTED WIRING BOARD ASSEMBLIES 52
- REPLACEMENT PARTS LIST 55
- PACKING OF THE SET 62

ELECTRICAL SPECIFICATIONS

POWER INPUT ..... AC 120 V, 60 Hz
POWER RATING 90W
PICTURE SIZE ..... 1,239 cm^2 (192sq inch)
CONVERGENCE ..... Magnetic
SWEEP DEFLECTION ..... Magnetic
FOCUS ..... Uni-Bi
INTERMEDIATE FREQUENCIES
  Picture IF Carrier Frequency ..... 45.75 MHz
  Sound IF Carrier Frequency ..... 41.25 MHz
  Color Sub-Carrier Frequency ..... 42.17 MHz (Nominal)
AUDIO POWER
  OUTPUT RATING ..... 2.5 W(RMS) x 2pcs
SPEAKER
  SIZE ..... 5 x 12 cm, 2pcs
  VOICE COIL IMPEDANCE ..... 16 ohm at 400 Hz
ANTENNA INPUT IMPEDANCE
  VHF/UHF ..... 75 ohm Unbalanced
TUNING RANGES
  VHF-Channels ..... 2 thru 13
  UHF-Channels ..... 14 thru 69
  CATV Channels ..... 1 thru 125
  (EIA, Channel Plan U.S.A.)

Specifications are subject to change without prior notice.

SHARP CORPORATION

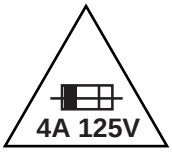
This document has been published to be used for after sales service only.
The contents are subject to change without notice.

IMPORTANT SERVICE SAFETY PRECAUTION

■ Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulating material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit. The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
   To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.



CAUTION: FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A-125V FUSE.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation, if the high voltage is as specified in the "High Voltage Check" instructions.
   It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in the glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter.
   The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value –no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also, under certain conditions, may produce radiation in exceeding of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
   Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

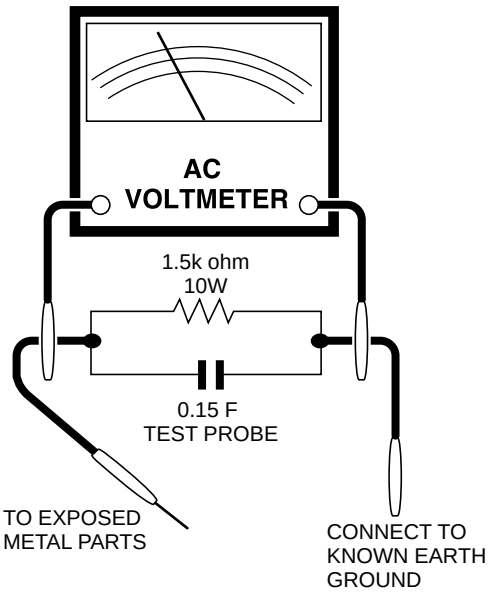
BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC cord directly into a 120 volt AC outlet, (Do not use an isolation transformer for this test).
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.
  AII checks must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)
  Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above indicate of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc.
Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

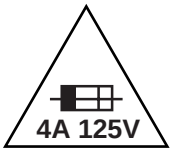
For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

PRECAUTIONS A PRENDRE LORS DE LA REPARATION

■ **Ne peut effectuer la réparation qu' un technicien spécialisé qui s'est parfaitement accoutumé à toute vérification de sécurité et aux conseils suivants.**

AVERTISSEMENT

1. N'entreprendre aucune modification de tout circuit. C'est dangereux.
2. Débrancher le récepteur avant toute réparation.
3. Les déversoirs thermiques à semi-conducteurs peuvent présenter un danger de choc électrique lorsque le réceqteur est en marche.
4. Le châssis de ce récepteur a deux systèmes de mise à la terre qui sont séparés par un matériau isolant. Le système de mise à la terre non-isolée (chaud) est pour le circuit du régulateur de tension B+ et le circuit de sortie horizontale. Le système de mise à la terre isolé est pour les basses tensions C. C. B+ et le circuit secondaire du transformateur de haute tension.



PRECAUTION:POUR LA PROTECTION CONTINUE CONTRE LES RISQUES D'INCENDIE, REMPLACER LE FUSIBLE PAR UN FUSIBLE DE MEME TYPE 4A-125V.

REPARATION DU SYSTEME A HAUTE TENSION ET DU TUBE-IMAGE

Lors de la réparation de ce systéme, supprimer la charge statique en branchant une résistance de 10 k en série avec un fil isolé (comme une sonde d'essai) entre la mise à la terre du tube-image et le fil d'anodel. (Le corden d'alimentation doit être retiré de la prise murale.)

1. Il est à noter que le tube-image de ce récepteur est intégralement protégé contre l'implosion.
2. Par mesure de sécurité, changer le tube-image pour un tube du même numéro de type.
3. Ne pas lever le tube-image par son col.
4. Ne manipuler le tube-image qu'en porant des lunettes incassables et qu'après avoir déchargé totalement la haute tension.

LIMITES DES RADIATIONS X ET DE LA HAUTE TENSION

1. Tout le personnel réparateur doit être instruit des instructions et procédés relatifs aux radiations X.
   Le tube-image, seule source de rayons X dons les téléviseurs transistorisés, n'émet pourtant pas de rayons mesurables si la haute tension est maintenue à un niveau préconisé dans la section "Vérification de la haute tension".
   C'est seulement quand la haute tension est excessive que les rayons X peuvent entrer dans l'enveloppe du tube-image y compris le conducteur de verre. Il est important de maintenir la haute tension en-dessous du niveau spécifié.
2. Il est essentiel que le réparateur ait sous la main un voltmètre à haute tension qui doit être périodiquement étalonné.
3. La haute tension doit toujours être maintenue à la valeur de régime-et pas plus haute. L'opération à des tensions plus élevées peut entraîner une panne du tube-image ou du circuit à haute tension et, dans certaines conditions, peut entraîner une radiation dépassant les niveaux préscrits.
4. Quand le régulateur à haute tension fonctionne correctement, il n'y a aucun problème de radiation X. Chaque fois qu'un châssis couleurs est réparé, la luminosité doit être examinée bout en contrôlant la haute tension à l'aide d'un voltmètre pour s'assurer que la haute tension ne dépasse pas la valeur spécifiée et qu'elle soit correctement réglée.
5. Ne pas utiliser un tube-image autre que celui spécifié et ne pas effectuer de modifications déconseillées du circuit à haute tension.
6. Lors de la recherche des pannes et des mesures d'essai sur un récepteur qui présente une haute tension excessive, éviter de s'approcher inutilement du récepteur.
   Ne pas faire fonctionner le récepteur plus longtemps que nécessaire pour localiser la cause de la tension excessive.

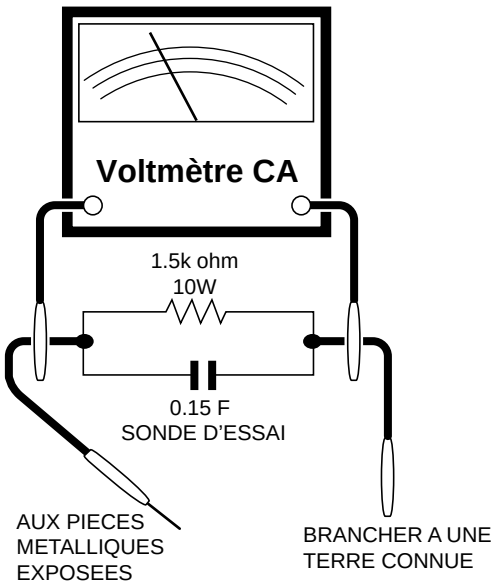
PRECAUTIONS A PRENDRE LORS DE LA REPARATION
(Suite)

VERIFICATIONS CONTRE L'INCEN-DIE ET LE CHOC ELECTRIQUE

Avant de rendre le récepteur à l'utilisateur, effectuer les vérifications suivantes.

1. Inspecter tous les faisceaux de câbles pour s'assurer que les fils ne soient pas pincés ou qu'un outil ne soit pas placé entre le châssis et les autres pièces métalliques du récepteur.
2. Inspecter tous les dispositifs de protection comme les boutons de commande non-métalliques, les isolants, le dos du coffret, les couvercles ou blindages de réglage et de compartiment, les réseaux de résistance-capacité, les isolateurs mécaniques, etc.
3. S'assurer qu'il n'y ait pas de danger d'électrocution en vérifiant la fuite de courant, de la facon suivante:

- Brancher le cordon d'alimentation directem-ent à une prise de courant de 120V. (Ne pas utiliser de transformateur d'isolation pour cet essai).
- A l'aide de deux fils à pinces, brancher une résistance de 1,5 k 10 watts en parallèle avec un condensateur de 0,15µF en série avec toutes les pièces métalliques exposées du coffret et une terre connue comme une conduite électrique ou une prise de terre branchée à la terre.
- Utiliser un voltmètre CA d'une sensibilité d'au moins 5000 /V pour mesurer la chute de tension en travers de la résistance.
- Toucher avec la sonde d'essai les pièces métalliques exposées qui présentent une voie de retour au châssis (antenne, coffret métallique, tête des vis, arbres de commande et des boutons, écusson, etc.) et mesurer la chute de tension CA en-travers de la résistance.
  Toutes les vérifications doivent être refaites après avoir inversé la fiche du cordon d'alimentation. (Si nécessaire, une prise d'adpatation non polarisée peut être utilisée dans le but de terminer ces vérifications.)
  Tous les courants mesurés ne doivent pas dépasser 0,5 mA.
  Dans le cas contraire, il y a une possibilité de choc électrique qui doit être supprimée avant de rendre le récepteur au client.

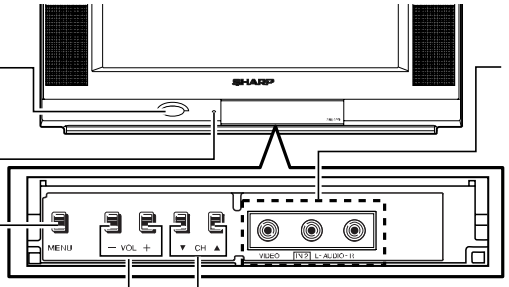


AVIS POUR LA SECURITE

De nombreuses pièces, électriques et mécaniques, dans les téléviseurs présentent des caractéristiques spéciales relatives à la sécurité, qui ne sont souvent pas évidentes à vue. Le degré de protection ne peut pas être nécessairement augmentée en utilisant des pièces de remplacement étalonnées pour haute tension, puissance, etc.
Les pièces de remplacement qui présentent ces caractéristiques sont identifiées dans ce manuel; les pièces électriques qui présentent ces particularités sont identifiées par la marque " ⚠ " et hachurées dans la liste des pièces de remplacement et les diagrammes schématiques.
Pour assurer la protection, ces pièces doivent être identiques à celles utilisées dans le circuit d'origine. L'utilisation de pièces qui n'ont pas les mêmes caractéristiques que les pièces recommandées par l'usine, indiquées dans ce manuel, peut provoquer des électrocutions, incendies, radiations X ou autres accidents.

LOCATION OF USER'S CONTROL

Front Panel



POWER
Press → On.
Press again → Off.

SENSOR AREA FOR REMOTE CONTROL

MENU
Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

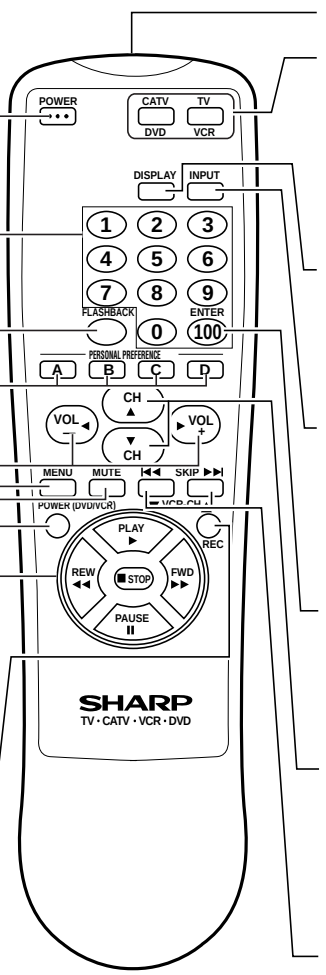
VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.

VIDEO [IN 2] **L-AUDIO-R**

(INSIDE DOOR)

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.

Basic Remote Control Functions



POWER
Press → On.
Press again → Off.

REMOTE KEYPAD
Accesses any channel from keypad.

FLASHBACK
Returns to previous channel.

PERSONAL PREFERENCE
With the Personal Preference buttons, you can program your favorite programs by using the 4 categories A, B, C and D. The channels can be accessed quickly by using these buttons.

VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.
• In menu mode, changes or selects the TV adjustments.

MENU
Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

MUTE
Press → Mutes sound.
Press again → Restores sound.
• CLOSED CAPTION appears when sound is muted.

POWER (DVD/VCR)
Press → On.
Press again → Off.

DVD/VCR CONTROL

REC

Infrared Transmitter Window

CATV/DVD-TV/VCR MODE buttons
Press TV/VCR, sends power and channel select commands (Channel up/down and Random Access buttons) to the TV and VCR control.
Press CATV/DVD, sends power and channel select commands to a cable TV converter and DVD control.

DISPLAY
Press → Displays receiving channel for four seconds.
Press again → Removes display.
• Temporarily displays receiving channel when in Closed Caption mode.

INPUT
Press → Switch to external video INPUT 1 mode or COMPONENT mode.
Press 2 times → Switch to external video INPUT 2 mode.
Press 3 times → Switch back to the original TV mode.

ENTER
Used in some instances where a Cable Converter Box requires an enter command after selecting channels, when using the **REMOTE KEYPAD** button.

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.
• Moves the " ● " mark of the MENU screens.

SKIP/VCR-CH

Note:
- The above shaded buttons on the Remote Control glow in the dark. To use the glow-in-the-dark display on the remote control, place it under a fluorescent light or other lighting.
- The phosphorescent material contains no radioactive or toxic material, so it is safe to use.
- The degree of illumination will vary depending on the strength of lighting used.
- The degree of illumination will decrease with time and depending on the temperature.
- The time needed to charge the phosphorescent display will vary depending on the surrounding lighting.
- Sunlight and fluorescent lighting are the most effective when charging the display.

INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdrivers or TV alignment tools.
(2) Before performing adjustments, the TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 4.0A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, B+ system, test the X-Radiation protection circuit to ascertain proper operation as follows:

1. Apply 120V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and adjust all customer controls for normal picture and sound.
3. Receive a good local channel.
4. Connect a digital voltmeter to P603 Pin3 and make sure that the voltmeter reads 18.9 ±1.1V.
5. Apply external 24.5V DC at P603 Pin3 by using an external DC supply, TV must be shut off.
6. To reset the protector, unplug the AC cord at least 4 second before plugging in again. Now make sure that normal picture appears on the screen.
7. If the operation of the horizontal oscillator does not stop in step 5, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

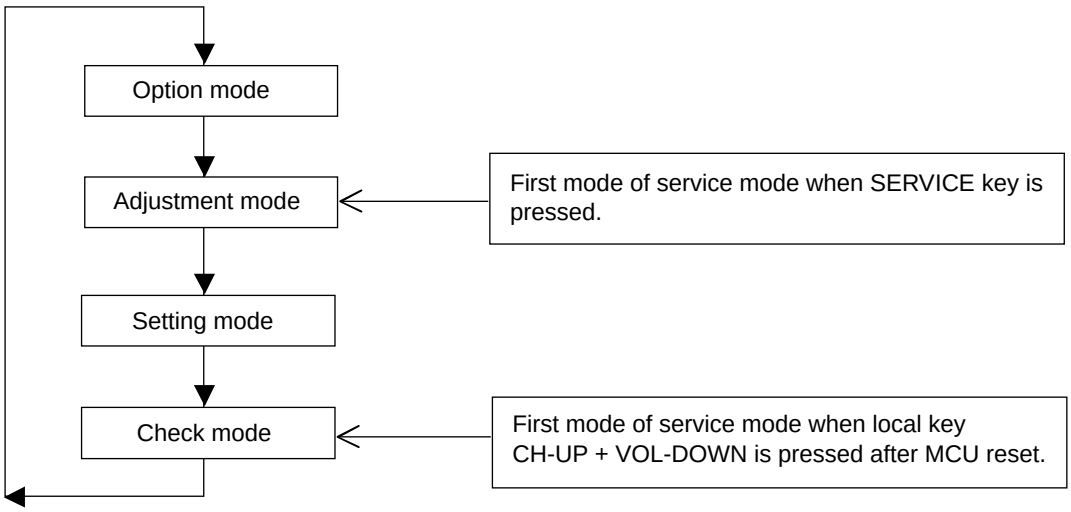
High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of picture tube.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with a strong air signal or a properly tuned in test signal.
3. Enter the service mode and set Y-mute ON by using Service R/C.
4. The voltage should be approximately 28.6kV (at zero beam).
   If a correct reading cannot be obtained, check circuitry for malfunctioning components. After the voltage test, make Y-mute off to the normal mode.

SERVICE MODE

Service Mode Overview

1. Service mode is entered by SERVICE key input or CH-UP +VOL-DOWN input during reset.
2. Service mode is cleared by entering SERVICE key or CH-UP +VOL-DOWN key command during service mode.
3. If key input port (SERVICE) input is LOW, then it is in service mode.
4. During key input port (SERVICE) input is LOW, clearing service mode by key input SERVICE or CH-UP + VOL-DOWN is disabled.
5. Service mode can be switched to 4 modes as follows by key input MENU;


Option mode
Adjustment mode
First mode of service mode when SERVICE key is pressed.
Setting mode
Check mode
First mode of service mode when local key CH-UP + VOL-DOWN is pressed after MCU reset.

6. AFT processing is disabled during service mode. PLL setting data is set to fo data.
7. All user data are set to default during service mode. FAO and SPEAKER user settings are off and on respectively in service mode. Energy Save is off.
8. Sleep timer, View timer and Off timer are inactivated in Service mode.
9. Sound is muting in service mode except at Adjustment Items V20, M01, M02, M03, M04, M05, and M06.

Adjustment Mode Items

No.	Item Name	IC	Register	Range	Default
V01	SUB-PICTURE	1 Chip	CONTRAST	0~127	127
V02	SUB-TINT	1 Chip	TINT	0~127	64
V03	SUB-COLOR	1 Chip	COLOR	0~127	64
V04	SUB-BRIGHT	1 Chip	BRIGHT	0~255	128
V05	SUB-SHARP	1 Chip	VIDEO-TONE	0~63	32
V06	V-SHIFT	1 Chip	V-SHIFT	0~7	4
V07	H-SHIFT	1 Chip	H-PHASE	0~31	16
V08	RF-AGC	1 Chip	RF-Delay	0~127	127
V09	V-SIZE	1 Chip	V-SIZE	0~63	32
V10	PIF-VCO	1 Chip	VIF-VCO	0~63	32
V11	R-CUTOFF	1 Chip	R-CUTOFF	0~255	127
V12	G-CUTOFF	1 Chip	G-CUTOFF	0~255	127
V13	B-CUTOFF	1 Chip	B-CUTOFF	0~255	127
V14	R-DRIVE	1 Chip	R-DRIVE	0~127	64
V15	B-DRIVE	1 Chip	B-DRIVE	0~127	64
V16	SUB-COLOR(YUV)	1 Chip	COLOR	0~127	64
V17	SUB-TINT(YUV)	1 Chip	BASEBAND-TINT	0~127	64
V18	CC-POS	Micron		0~255	32
V19	(Vertical mode)	1 Chip	V-MUTE,SERVICE	0, 1, 2	0
V20	SUB-VOL	1 Chip	A-ATT	0~127	127
V21	H-VCO	1 Chip	H-VCO	0~7	4
M01	MTS-ATT	MTS	ATT	0~15	10
M02	MTS-VCO	MTS	VCO	0~63	32
M03	MTS-FILTER	MTS	FILTER	0~63	28
M04	MTS-WIDEBAND	MTS	WIDEBAND	0~63	27
M05	MTS-SPECTRAL	MTS	SPECTRAL	0~63	32
M06	SUB-VOL	MTS	VOL	0~63	63

■ SELF ADJUSTMENT

H-VCO

1. When there is H-VCO self-adjustment key input for adjustment item H-VCO, self-adjustment is performed.
2. H-FREE(1chip) is set to 1.
3. H-OUT is set by intelligent monitor output.
4. IM input is set as TIM input.
5. H-VCO(1chip) data is changed so that the number of input pulse is 125 inside 8ms interval.
6. When adjustment completed, OSD display and H-VCO self-adjustment status data of EEPROM are updated.
7. H-FREE(1chip), intelligent monitor output and IM input mode are recovered.

RF-AGC

1. When there is RF-AGC self-adjustment key input for adjustment item RF-AGC, self-adjustment is performed.
2. AGC-OUT is set by intelligent monitor output.
3. IM input is set as AD input.
4. By decreasing RF-AGC (1chip) data from current RF-AGC adjustment value to 0, AFT input voltage becomes the maximum setting value.
5. Increase RF-AGC(1chip) data, when AFT input voltage is at (max. 0.3V) point, adjustment is completed.
6. When adjustment completed, OSD display and RF-AGC self-adjustment status data of EEPROM are updated.
7. Intelligent monitor output and IM input mode are recovered.

PIF-VCO

1. When there is PIF-VCO self-adjustment key input for adjustment item PIF-VCO, self-adjustment is performed.
2. VIF-DEF(1chip) is set to 1.
3. AFC is set by intelligent monitor output.
4. IM input is set as AD input.
5. VIF-VCO(1chip) data is changed so that input voltage becomes 2.5V.
6. When adjustment completed, OSD display and PIF-VCO self-adjustment status data of EEPROM are updated.
7. VIF-DEF(1chip), intelligent monitor output and IM input mode are recovered.

MTS-FILTER

Adjustment is performed in the center of the range when FILTER status is OK.

1. If data is changed from 0 to 63, point where NG $\rightarrow$ OK is A and point where OK $\rightarrow$ NG is B.
2. If data is changed from 63 to 0, point where NG $\rightarrow$ OK is C and point where OK $\rightarrow$ NG is D.
3. (A+B+C+D)/4 is the adjustment point.

Setting Mode Items

No.	Item Name	IC	Register	Range	Default
F01	VideoTone-Gain (TV)	1chip	V-TONE	0 / 1	0
F02	VideoTone-Gain (AV)	1chip	V-TONE	0 / 1	0
F03	VideoTone-Gain(YUV)	1chip	V-TONE	0 / 1	0
F04	ABCL	1chip	ABCL	0 / 1	0
F05	BS	1chip	BS-OFF	0 / 1	0
F06	ABCL-G	1chip	ABCL-G	0 / 1	0
F07	SHP-AV	OFFSET	VIDEO-TONE(OFFSET)	-16~+16	0
F08	SHP-YUV	OFFSET	VIDEO-TONE(OFFSET)	-16~+16	0
F09	RGB-CLIP	1chip	ExtRGB-Clip	0 / 1	0
F10	E-SAVE	OFFSET	CONTRAST(OFFSET)	0~63	30
F11	FAO-VOL	1chip	A-ATT	0~127	120
F12	PIF-G	1chip	VIF-GAIN	0~7	4
F13	Y-DELAY(TV)	1chip	Y-Delay	0~7	0
F14	Y-DELAY(AV)	1chip	Y-Delay	0~7	0
F15	Y-DELAY(YUV)	1chip	Y-Delay	0~7	0
F16	TINT-AV	OFFSET	TINT(OFFSET)	-32~+32	0
F17	COL-AV	OFFSET	COLOR(OFFSET)	-32~+32	0
F18	R-DRI(R2)	OFFSET	R-DRI(OFFSET)	-32~+32	0
F19	R-DRI(R)	OFFSET	R-DRI(OFFSET)	-32~+32	0
F20	R-DRI(B)	OFFSET	R-DRI(OFFSET)	-32 ~+32	0
F21	B-DRI(R2)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F22	B-DRI(R)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F23	B-DRI(B)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F24	V-FREE	1chip	V-FREE	0 / 1	0
F25	GAMMA	1chip	GAMMA	0~3	0
F26	TRAP(TV)	1chip	TRAP-FINE	0~3	2
F27	TRAP(AV)	1chip	TRAP-FINE	0~3	2
F28	H-FREE	1chip	H-FREE	0 / 1	0
F29	1W(TV)	1chip	V.Window	0 / 1	0
F30	1W(AV)	1chip	V.Window	0 / 1	0
F31	YLPF	1chip	YSW-LPF	0 / 1	1
F32	BS-D	1chip	BS-DISCHARGE	0~3	0
F33	BS-C	1chip	BS-CHARGE	0~3	0
F34	SL(TV)	1chip	S-SLICE DOWN	0~3	0
F35	SL(AV)	1chip	S-SLICE DOWN	0~3	0
F36	SL(YUV)	1chip	S-SLICE DOWN	0~3	0
F37	AFC2	1chip	AFC2-G	0 / 1	0
F38	VD(TV)	1chip	Vsync-Det	0 / 1	0
F39	VD(AV)	1chip	Vsync-Det	0 / 1	0
F40	AS(TV)	1chip	Auto-Slice	0 / 1	0
F41	AS(AV)	1chip	Auto-Slice	0 / 1	0
F42	AS(YUV)	1chip	Auto-Slice	0 / 1	0
F43	FBP(TV)	1chip	FBP Vth	0 / 1	0
F44	FBP(AV)	1chip	FBP Vth	0 / 1	0
F45	FBP(YUV)	1chip	FBP Vth	0 / 1	0
F46	C.Clip Level	1chip	C.Clip Level	0 / 1	0
F47	PSW	MTS	PSW	0 / 1	0
F48	FAO-VOL	MTS	VOL	0~63	60
F49	CP	PLL	CP	0 / 1	0
F50	CC LEVEL	MICRON			0
F51	OSD POS	MICRON			0
F52	OFFSET-ADJ-COL	1 chip	COLOR	-32~32	0
F53	OFFSET-ADJ-TINT	1 chip	TINT	-32~32	0
F54	OFFSET-ADJ-TINT-YUV	1 chip	BASEBAND-TINT	-32~32	0

Option Mode Items

No	ITEM	0	1	DEFAULT
O01	DEM0	Without DEMO	With DEMO	1
O02	DOWNLOAD	Without V-CHIP OP	With V-CHIP OP	1
O03	V-CHIP	Without V-CHIP	With V-CHIP	1
O04	SPEAKER	Without SPEAKER	With SPEAKER	1
O05	FAO	Without FAO	With FAO	1
O06	P.PREF	Without P.PREF	With P.PREF	1
O07	UNIV+	Without UNIV+	With INIV+	1
O08	VIEW TIMER	Without VIEW TIMER	With VIEW TIMER	1
O09	EZ-SETUP	EZ-SETUP	AUTO PRESET	1
O10	PON-CH	Without POWER-ON	With POWER-ON	1
O11	FAV-COL	FAV-COL	COL-TEMP	1
O12	COMPONENT	Without COMPONENT	With COMPONENT	1
O13	AV	Without AV	With AV	1
O14	AV2	AV1 system	AV2 system	1
O15	MTS	Without MTS	With MTS	1
O16	TONE-CTRL	Without S-ADJ	With S-ADJ	1
O17	AUTO-OFF	Without AUTO-OFF	With AUTO-OFF	1
O18	INIT-LANG	ENGLISH	SPANISH	1
O19	SETUP-FLAG	NO SETUP	AUTO SETUP	1
O20	FR.AV (Front, Rear AV)	3: Display "FRONT A/V INPUTS" and "REAR A/V INPUTS" in DEMO mode. 2: Display "FRONT A/V INPUTS" only in DEMO mode. 1: Display "REAR A/V INPUTS" only in DEMO mode. 0: No display of above lines in DEMO mode.		3

Check Mode

Micron mask version, software version and ROM correction function status are displayed in check mode.

ADJUSTMENT METHOD

Caution: to get into the service mode, one of the ways is press direct key for service items. the other ways is short the main chassis JA309 and JA402

There is three stage of Service Mode data
First stage data from V01 ~ M06
to go into second stage of service mode data, press MENU key
Second stage data from F01 ~ F51
to go into third stage of service mode data, press MENU key
Third stage data from 001 ~ 020

Below is the contents of these data

First Stage

Data	Service Mode	Function	Range	Default Data
V01	SUB-PICTURE	CONTRAST	0~127	127
V02	SUB-TINT	TINT	0~127	64
V03	SUB-COLOR	COLOR	0~127	64
V04	SUB-BRIGHT	BRIGHT	0~255	128
V05	SUB-SHARP	VIDEO-TONE	0~63	32
V06	V-SHIFT	V-SHIFT	0~7	7
V07	H-SHIFT	H-PHASE	0~31	16
V08	RF-AGC	RF-DELAY	0~127	127
V09	V-SIZE	V-SIZE	0~63	32
V10	PIF-VCO	VIF-VCO	0~63	32
V11	R-CUTOFF	R-CUTOFF	0~255	64
V12	G-CUTOFF	G-CUTOFF	0~255	64
V13	B-CUTOFF	B-CUTOFF	0~255	64
V14	R-DRIVE	R-DRIVE	0~127	64
V15	B-DRIVE	B-DRIVE	0~127	64
V16	SUB-COLOR(YUV)	COLOR	0~127	64
V17	SUB-TINT(YUV)	BASEBAND-TINT	0~127	64
V18	CC-POS	CC-POS	0~255	32
V19	SCREEN CUT OFF	CUT OFF	0~2	0
V20	SUB-VOL	A-ATT	0~127	127
V21	H-VCO	H-VCO	0~7	4
M01	MTS-ATT	ATT (MTS)	0~15	10
M02	MTS-VCO	VCO (MTS)	0~63	32
M03	MTS-FILTER	FILTER (MTS)	0~63	28
M04	MTS-WIDEBAND	WIDEBAND (MTS)	0~63	27
M05	MTS-SPECTRAL	SPECTRAL (MTS)	0~63	32
M06	SUB-VOL	VOL (MTS)	0~63	63

Auto Adjustment Item
1. H-VCO (Currently need manual adj)
2. RF-AGC
3. PIF-VCO
4. MTS-FILTER

Second Stage

Data	Service Mode	Function	Range	Default Data
F01	VIDEO TONE -GAIN (TV)	V-TONE	0/1	0
F02	VIDEO TONE -GAIN (AV	V-TONE	0/1	0
F03	VIDEO TONE -GAIN(YUV)	V-TONE	0/1	0
F04	ABCL	ABCL	0/1	0
F05	BS	BS-OFF	0/1	0
F06	ABCL-G	ABCL-G	0/1	0
F07	SHP-AV	VIDEO-TONE(OFFSET)	-16~+16	0
F08	SHP-YUV	VIDEO-TONE(OFFSET)	-16~+16	0
F09	SHP-CLIP	EXTRGB-CLIP	0/1	0
F10	E-SAVE	CONTRAST(OFFSET)	0~63	30
F11	FAO-VOL	A-ATT	0~127	120
F12	PIF-G	VIF-GAIN	0~7	4
F13	Y-DELAY(TV)	Y-DELAY	0~7	0
F14	Y-DELAY(AV)	Y-DELAY	0~7	0
F15	Y-DELAY(YUV)	Y-DELAY	0~7	0
F16	TINT-AV	TINT(OFFSET)	-32~+32	0
F17	COL-AV	COLOR(OFFSET)	-32~+32	0
F18	R-DRI(R2)	R-DRI(OFFSET)	-32~+32	0
F19	R-DRI(R)	R-DRI(OFFSET)	-32~+32	0
F20	R-DRI(B)	R-DRI(OFFSET)	-32~+32	0
F21	B-DRI(R2)	B-DRI(OFFSET)	-32~+32	0
F22	B-DRI(R)	B-DRI(OFFSET)	-32~+32	0
F23	B-DRI(B)	B-DRI(OFFSET)	-32~+32	0
F24	V-FREE	V-FREE	0/1	0
F25	GAMMA	GAMMA	0~3	0
F26	TRAP(TV)	TRAP-FINE	0~3	2
F27	TRAP(AV)	TRAP-FINE	0~3	2
F28	H-FREE	H-FREE	0/1	0
F29	1W(TV)	V.WINDOW	0/1	0
F30	1W(AV)	V.WINDOW	0/1	0
F31	YLPF	YSW-LPF	0/1	1
F32	BS-D	BS-DISCHARGE	0~3	0
F33	BS-C	BS-CHARGE	0~3	0
F34	SL(TV)	S-SLICE DOWN	0~3	0
F35	SL(AV)	S-SLICE DOWN	0~3	0
F36	SL(YUV)	S-SLICE DOWN	0~3	0
F37	AFC2	AFC2-G	0/1	0
F38	VD(TV)	VSYNC-DET	0/1	0
F39	VD(AV)	VSYNC-DET	0/1	0
F40	AS(TV)	AUTO-SLICE	0/1	0
F41	AS(AV)	AUTO-SLICE	0/1	0
F42	AS(YUV)	AUTO-SLICE	0/1	0
F43	FBP(TV)	FBP VTH	0/1	0
F44	FBP(AV)	FBP VTH	0/1	0
F45	FBP(YUV)	FBP VTH	0/1	0
F46	C.CLIP LEVEL	C.CLIP LEVEL	0/1	0
F47	PSW	PSW	0/1	0
F48	FAO-VOL	VOL	0~63	60
F49	CP	CHARGE PUMP	0/1	0
F50	CC LEVEL	CC LEVEL	0/1	0
F51	OSD POS	OSD POS	0/1	0
F52	COL OFFSET	(SUR → NOR)	-32~+32	0
F53	TINT OFFSET	(SUR → NOR)	-32~+32	0
F54	TING-YUV	TINT-YUV(OFFSET)	-32~+32	0

Third Stage

Data	Service Mode	DATA="0"	DATA="1"	Default Data
001	DEMO	DEMO OFF	ON	1
002	DOWNLOAD	V-CHIP OP OFF	ON	1
003	V-CHIP	V-CHIP OFF	ON	1
004	SPEAKER	SPEAKER OFF	ON	1
005	FAO	FAO OFF	ON	1
006	P.PREF	P.REF OFF	ON	1
007	UNIV+	UNIV+ OFF	ON	1
008	VIEW TIMER	VIEW TIMER OFF	ON	1
009	EZ-SETUP	EZ-SETUP	AUTO PRESET	1
010	PON-CH	POWER-ON OFF	0N	1
011	FAV-COL	FAV-COL	COL-TEMP	1
012	COMPONENT	COMPONENT OFF	ON	1
013	AV	AV OFF	ON	1
014	AV2	AV2 OFF	ON	1
015	MTS	MTS OFF	ON	1
016	TONE-CTRL	S-ADJ OFF	ON	1
017	AUTO-OFF	AUTO-OFF OFF	ON	1
018	INIT-LANG	ENGLISH	SPANISH	1
019	SETUP-FLAG	NO SET UP	AUTO SET UP	1
020	AV-FR	"0"=NO AV "1"=REAR "2"=FRONT "3"=REAR & FRONT		3

ADJUSTMENT ITEM	OPTION SET UP		
ADJUSTMENT POSITION	REFER AS BELOW	STEP RANGE	REFER AS BELOW
CONTROL	–		
PRE-ADJUST REQUIREMENT	–		
CONTENT	–		
INPUT CONDITION	20F630, CU20F630		
OUTPUT	OSD CHECKING		

ADJUSTMENT PROCEDURE

BUS OPTION FOR THIRD STAGE SERVICE DATA

FUNCTION	001 DEMO	002 DOWNLOAD	003 V-CHIP	004 SP	005 FAO	006 P.PREF	007 UNIV+	008 VIEW	009 EZ	010 PON-CH
20F630	1	1	1	1	1	1	1	1	0	0
CU20F630	1	0	0	1	1	1	1	1	0	0
DEF	**"0"=DISABLE "1"=ENABLE** 009 → "0"=EZ-SETUP "1"=AUTO PRESET									

BUS OPTION FOR THIRD STAGE SERVICE DATA

FUNCTION	011 FAV-COL	012 COMP	013 AV	014 AV2	015 MTS	016 TONE	017 AUTO	018 LAN	019 SETUP	020 AV-FR
20F630	1	1	1	1	1	1	0	0	1	3
CU20F630	1	1	1	1	1	1	0	0	1	3
DEF	011 → "0"=FAV-COL "1"=COL-TEMP 018 → "0"=ENGLISH "1"=SPANISH 019 → "0"=NO SET UP "1"=AUTO SETUP									

ADJUSTMENT ITEM	OPTION SET UP		
ADJUSTMENT POSITION	REFER AS BELOW	STEP RANGE	REFER AS BELOW
CONTROL	–		
PRE-ADJUST REQUIREMENT	–		
CONTENT	–		
INPUT CONDITION	20F630, CU20F630		
OUTPUT	OSD CHECKING		

ADJUSTMENT PROCEDURE

DATA SETUP FOR FIRST AND SECOND STAGE SERVICE DATA

FUNCTION	V05 SHARP	F13 Y-DL(TV)	F14 Y-DL(AV)	F16 TINT-AV	F17 COL-AV	F30 1W(AV)	F34 SL(TV)	F38 VD(TV)	F40 AS(TV)	F49 CP
20F630	50	5	2	-7	4	1	1	1	1	1
CU20F630	50	5	2	-7	4	1	1	1	1	1
DEF										

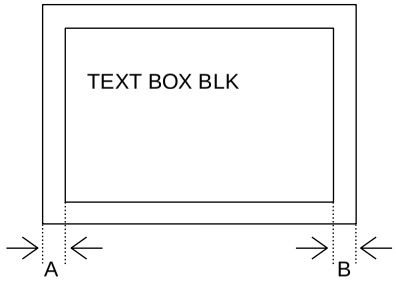
DATA SETUP FOR FIRST AND SECOND STAGE SERVICE DATA

FUNCTION	F18 R-D(R2)	F19 R-D(R)	F20 R-D(B)	F21 B-D(R2)	F22 B-D(R)	F23 B-D(B)	F52 C-OF	F53 TI-OF	F35 SL(AV)	F41 AS(AV)	F48 FAO-VOL	F54 TIN-YUV
20F630	+8	+3	-2	-18	-8	+6	+10	+8	1	1	58	-8
CU20F630	+8	+3	-2	-18	-8	+6	+10	+8	1	1	58	-8
DEF												

ADJUSTMENT ITEM	**H-POSITION**		
ADJUSTMENT POSITION	V07	STEP RANGE	0-31
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, CRT-PURITY		
CONTENT	US 4 CH LION HEAD (MONOSCOPE)		
INPUT CONDITION	AC 120V, US MAGNETIC FIELD		
OUTPUT	CONFIRMATION BY CRT SCREEN		
ADJUSTMENT PROCEDURE	1. ADJUST THE **V07** BUS DATA TO HAVE A BALANCE POSITION TO SPEC OF **A=B**. 2. IF CANNOT MAKE IT TO **A=B**, ADJ FROM THE BEST POINT SO THAT **B** SLIDELY SMALLER THAN **A** 		
	[CHECKING SPEC] LEFT AND RIGHT SYMMETRICAL		

ADJUSTMENT ITEM	**V-SIZE**		
ADJUSTMENT POSITION	V09	STEP RANGE	0~63
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, CRT PURITY, V-PHASE, +B ADJUST		
CONTENT	US 4 CH LION HEAD		
INPUT CONDITION	AC 120V		
OUTPUT	CONFIRMATION BY CRT SCREEN		
ADJUSTMENT PROCEDURE	ADJUST THE V09 BUS DATA UNTILL THE OVERSCAN BECOME AS SPECIFIED BELOW. CAUTION: - PLEASE AGING TV MORE THAN 10 MINUTES BEFORE ADJUSTMENT.		
	[CHECKING SPEC] OVERSCAN 10 ± 2.5%		

ADJUSTMENT ITEM	V-PHASE		
ADJUSTMENT POSITION	V06	STEP RANGE	0-7
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, CRT-PURITY		
CONTENT	US 4 CH LION HEAD (MONOSCOPE PATTERN)		
INPUT CONDITION	120V, RF INPUT, ZERO MAGNETIC FIELD		
OUTPUT	CONFIRMATION ON CRT SCREEN		
ADJUSTMENT PROCEDURE	ADJUST V06 BUS DATA TO HAVE MOST ACCEPTABLE VERTICAL POSITION. THE MONOSCOPE PATTERN SHOULD BE BALANCE IN VERTICAL POSITION **NOTE: THE DATA FOR V06 LIMIT AT <= 04, EVEN POSITION GOOD ENOUGH**		
	[CHECKING CONFIRMATION]		

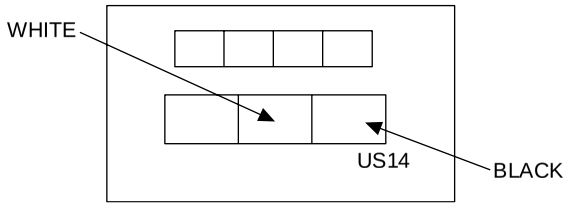
ADJUSTMENT ITEM	CLOSED CAPTION SET UP		
ADJUSTMENT POSITION	V18	STEP RANGE	0~255
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	US 4 CH LION HEAD		
INPUT CONDITION	AC 120V		
OUTPUT	CONFIRMATION ON CRT DISPLAY.		
ADJUSTMENT PROCEDURE	1) BY SELECTING THE **V18**, BOX BLK TEXT WILL BE APPEARED. 2) ADJUST THE **V18** BUS DATA TO HAVE A BALANCE POSITION TO SPEC OF A=B.  		
	[CHECKING SPEC] LEFT AND RIGHT SYMMETRICAL		

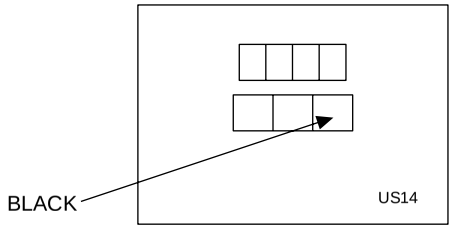
ADJUSTMENT ITEM	H-VCO		
ADJUSTMENT POSITION	V21	STEP RANGE	0-7
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	NO SIGNAL (RASTER) CONDITION		
INPUT CONDITION	AC 120V		
OUTPUT	IC 801 PIN 11 (MANUAL ADJ)		
ADJUSTMENT PROCEDURE	1) GO TO SERVICE MODE, 2) GO TO SERVICE DATA **V21**, ADJ UNTIL FREQ AS BELOW (SELF ADJ) 1) GO TO SERVICE MODE, BY SELECTING THE SERVICE DATA V21 2) PRESS THE R/C TO OPERATE AUTO H-VCO, OSD APPEAR "OK" AT SCREEN 3) IF APPEAR "NG" REPEAT STEP 2		
	[CHECKING SPEC] **FREQ = 15.735 ± 0.2 KHz**		

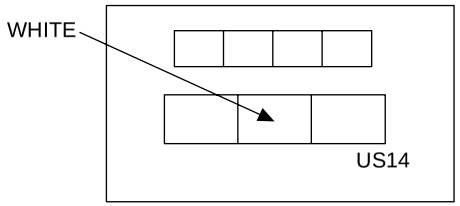
ADJUSTMENT ITEM	PIF-VCO		
ADJUSTMENT POSITION	V10	STEP RANGE	0~63
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	NO SIGNAL (RASTER) CONDITION		
INPUT CONDITION	AC 120V		
OUTPUT	CONFIRMATION ON CRT DISPLAY (AUTO), IC801 PIN 2 VOLTAGE (MANUAL).		
ADJUSTMENT PROCEDURE	(AT SELF ADJUSTMENT MODE) 1) GO INTO SERVICE MODE, BY SELECTING THE SERVICE DATA V10 2) PRESS THE R/C FOR AUTO PIF-VCO KEY, OSD APPEAR “OK” AT SCREEN 3) IF APPEAR “NG” PLS REPEAT STEP2 (AT MANUAL ADJUSTMENT MODE) 1) GO INTO SERVICE MODE, BY SELECTING THE SERVICE DATA V10 2) ADJUST THE DATA UP/DOWN UNTIL IC801 PIN 2 VOLTAGE BECOME AS SPECIFIED BELOW		
	[CHECKING SPEC] 2.5 ± 0.5 V DC (CHECKING SPEC : 2.50 ± 1.5V)		

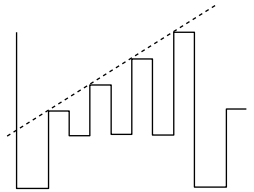
ADJUSTMENT ITEM	RF-AGC		
ADJUSTMENT POSITION	V08	STEP RANGE	0-127
CONTROL	I²C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	US10CH HALF COLOR BAR		
INPUT CONDITION	RF INPUT FIELD STRENGTH **56dBµV** (FIX)		
OUTPUT	TUNER AGC TERMINAL (TP 201) OR CRT DISPLAY CONFIRMATION		
ADJUSTMENT PROCEDURE	**(AT SELF ADJUSTMENT MODE)** 1. GO TO SERVICE MODE 2. GO TO SERVICE DATA **V08**, PRESS R/C TO OPEARATE AUTO-AGC KEY AND CONFIRM THE **OK** DISPLAY ON THE SCREEN. 3. IF APPEAR NG PLS REPEAT STEP 2 AGAIN. **(AT MANUAL ADJUSTMENT MODE)** 1. ADJUST THE V08 BUS DATA UNTIL AGC TERMINAL VOLTAGE BE-COME MAXIMUM, THEN DROP 0.1V BELOW MAXIMUM VOLTAGE. 2. CHANGE THE ANTENNA INPUT SIGNAL TO 63-67 dBµV, AND MAKE SURE THERE IS NO NOISE 3. CHANGE THE ANTENNA INPUT SIGNAL TO 90-95 dBµV TO BE SURE THAT THERE IS NO CROSS MODULATION BEAT.		
	[CHECKING SPEC] MAX - 0.1V dc		

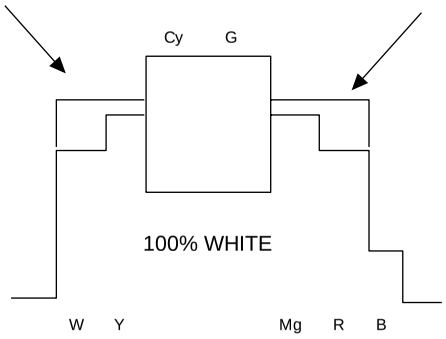
ADJUSTMENT ITEM	SCREEN		
ADJUSTMENT POSITION	V11,V12,V13	STEP RANGE	0-255
CONTROL	I²C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	WINDOW PATTERN OR US4CH LION HEAD		
INPUT CONDITION	120V		
OUTPUT	CONFIRMATION ON CRT DISPLAY		
ADJUSTMENT PROCEDURE	1) IN SERVICE MODE, SET **V04&V11&V12&V13** TO 127; **V14&V15** TO 64, GET IN Y-MUTE BY R/C AND SET **V19** TO “1”, PICTURE APPEAR IN CUT-OFF CONDITION 2) ADJUST THE SCREEN SO THAT CUT-OFF LINE APPEAR IN LOW BRIGHT, THEN JUDGE THAT WHETHER THE CUT-OFF LINE APPEAR IN RED OR GREEN OR BLUE COLOR, IN THIS CONDITION V11=R-CUTOFF, V12=G-CUTOFF, V13=B-CUTOFF, FIX THE DATA OF THE COLOR APPEAR IN CUTOFF LINE AND USE R/C TO ADJUST THE OTHER TWO CUT-OFF DATA SO THAT CUT-OFF LINE COLOR BE-COME WHITE. 3) TURN THE SCREEN VR OF FBT SO THAT CUT-OFF LINE JUST DIS-APPEAR AND USE R/C TO SET **V19** TO “0”, NEXT DISABLE THE Y-MUTE SO THAT PICTURE APPEAR IN NORMAL MODE.		
	[VOLTAGE CONFIRMATION]		

ADJUSTMENT ITEM	WHITE BALANCE		
ADJUSTMENT POSITION	V14,V15,V11,V12,V13	STEP RANGE	0-127, 0~255
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, SCREEN		
CONTENT	23CH 501RE WINDOW PATTERN		
INPUT CONDITION	120V		
OUTPUT	CRT SCREEN DISPLAY.		
ADJUSTMENT PROCEDURE	1) **WHITE** (HIGH BEAM) FIRST LET THE GUM POINT AT **BLACK** POSITION (AS DRAWING ATTACH), ADJ V04 UNTIL **BRIGHTNESS Y** BECOME **5 cd/m2**, THEN LET THE GUN POINT AT **WHITE** POSITION (AS DRAWING ATTACH), ADJUST **V01** UNTIL BRIGHTNESS Y BECOME **150 cd/m2**, ADJUST THE BUS DATA OF **V14** (R DRIVE), **V15**(B DRIVE) UNTIL THE AXIS OF COLOR TEMPERATURE BECOME **X=0.273, Y=0.280** 2) **BLACK** (LOW BEAM) LET THE GUN POINT AT BLACK POSITION, IF THE VALUE SHIFTED AWAY FROM THE DATA ADJUSTED IN STEP 1), ADJUST AGAIN THE TWO SERVICE DATA WHICH HAVE CHOSEN AT SCREEN ADJUST SO THAT TO OBTAIN THE SIMILAR AXIS AS ABOVE. ***WARNING:** DO NOT DISTURB THE MINI STEP GUN DATA DURING THIS ADJUSTMENT. **REPEAT STEP 1), 2) TO GET A REGULATED POSITION.  		
	[CHECKING CONFIRMATION] X=0.273, Y=0.280 (11,600°K + 1 MPCD)		

ADJUSTMENT ITEM	SUB-BRIGHT		
ADJUSTMENT POSITION	V04	STEP RANGE	0-255
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, SCREEN, WHITE BALANCE		
CONTENT	WINDOW PATTERN		
INPUT CONDITION	120V		
OUTPUT	CRT SCREEN DISPLAY.		
ADJUSTMENT PROCEDURE	1) LET THE GUN POINT AT BLACK POSITION (AS ATTACH DRAWING), ADJUST V04 BUS DATA UNTIL BRIGHTNESS Y=0.5 cd/m2, **THEN STEP DOWN MORE 4 STEP**  		
	[VOLTAGE CONFIRMATION] BRIGHTNESS Y=0.5 cd/m2, THEN STEP DOWN MORE 4 STEP		

ADJUSTMENT ITEM	SUB-PICTURE		
ADJUSTMENT POSITION	V01	STEP RANGE	0-127
CONTROL	I²C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, SCREEN, WHITE BALANCE, SUB-BRIGHTNESS		
CONTENT	WINDOW PATTERN		
INPUT CONDITION	120V		
OUTPUT	CRT SCREEN DISPLAY.		
ADJUSTMENT PROCEDURE	1) LET THE GUN POINT AT WHITE POSITION (AS ATTACH DRAWING), ADJUST **V01** BUS DATA UNTIL BRIGHTNESS Y=**150 cd/m2.** **NOTE: ALLOWABLE DATA FOR V01 IS >= 90, EVEN Y CAN'T MATCH THE SPEC**  		
	[VOLTAGER CONFIRMATION] BRIGHTNESS Y=150 cd/m2		

ADJUSTMENT ITEM	SUB-TINT		
ADJUSTMENT POSITION	V02	STEP RANGE	0-127
CONTROL	I²C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC		
CONTENT	US 10 CH HALF COLOR BAR PATTERN		
INPUT CONDITION	120V		
OUTPUT	B-AMP TR BASE (TP853) CONFIRM WITH OSCILLOSCOPE		
ADJUSTMENT PROCEDURE	1) GET IN Y-MUTE FUNCTION BY R/C. 2) ADJUST THE **V02** BUS DATA TO GET A WAVEFORM AS BELOW. 3) DISABLE THE Y-MUTE **PLS TAKE NOTE THAT SERVICE MODE DATA F53 NEED TO SET +8  B-AMP BASE (TP853) MUST BE IN STEPPING LEVEL		
	[CONFIRMATION]		

ADJUSTMENT ITEM	SUB-COLOR		
ADJUSTMENT POSITION	V03	STEP RANGE	0-127
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC, **SUB-PICT, SUB-TINT**		
CONTENT	US 10 CH HALF COLOR BAR PATTERN		
INPUT CONDITION	120V		
OUTPUT	R-AMP TR BASE (TP851) CONFIRM WITH OSCILLOSCOPE		
ADJUSTMENT PROCEDURE	1) SET THE **V03** BUS DATA TO GET A WAVEFORM AS BELOW 2) THIS WAVEFORM SHOWS THAT THE 75% WHITE & RED PORTIONS OF COLOR BAR BEAT AT THE SAME LEVEL **PLEASE TAKE NOTE THAT SERVICE DATA F52 MUST SET TO +10  		
	[CHECKING CONFIRMATION]		

ADJUSTMENT ITEM	X-RAY PROTECTION OPERATING CONFIRMATION		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	US 4 CH LION HEAD (MONOSCOPE PATTERN)		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	CONFIRMATION BY THE CRT		
ADJUSTMENT PROCEDURE	SET THE USER CONTROL TO SHIPMENT POSITION. **[VOLTAGE CONFIRMATION]** CHECK THE VOLTAGE OF P603 PIN 3 AS SPECIFIED BELOW. **[OPERATION CONFIRMATION]** SUPPLY THE DC VOLTAGE TO P603 PIN 3 AND MAKE SURE THE PROTECTOR IS FUNCTIONED. HORIZONTAL OSCILATION STOP AND PICTURE DISAPPEAR. **[RECOVER INFORMATION]** PULL OUT THE AC CORD. **[CAUTION]** FROM THE RECOVER CONFIRMATION MENTIONED ABOVE, THE AC CODE MUST BE PULLED OUT AT LEAST 4 SECOND BEFORE PLUGGING IN AGAIN.(IN ORDER TO MAKE SURE THE μ-COM HAS BEEN RESET.)		
	[VOLTAGE CONFIRMATION] TP VOLTAGE: **18.9± 1.1V DC** OPERATION VOLTAGE: **24.5V**		

ADJUSTMENT ITEM	HIGH VOLTAGE		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	US 4 CH LION HEAD (MONOSCOPE PATTERN)		
INPUT CONDITION	AC 130V, RF INPUT		
OUTPUT	CRT ANODE VOLTAGE		
ADJUSTMENT PROCEDURE	SET THE USER CONTROL TO SHIPMENT SETTING POSITION. PUSH ON Y-MUTE BY R/C CONFIRM THE VOLTAGE OF CRT ANODE BY HIGH VOLTAGE METER AND MAKE SURE THE READING IS AS BELOW. **HIGH VOLTAGE** BELOW **30kV**		
	[CAUTION POINT] USE ELECTROSTATIC HI-VOLTAGE METER AND FOLLOW THE UL/ DHHS STANDARD TO MAKE CORRECTION AND CONTROL.		

ADJUSTMENT ITEM	V-CHIP		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	UHF 15 CH (V-CHIP TRANSMISION SIGNAL CH)		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	CONFIRMATION BY THE CRT		
ADJUSTMENT PROCEDURE	1) RECEIVE THE UHF 15 CH. 2) PUSH THE DISPLAY KEY (R/C), MAKE SURE THAT THE OSD V-CHIP RATING DISPLAY IS EQUAVALENCE TO TRANSMISSION RATING.		
	[VOLTAGE CONFIRMATION]		

ADJUSTMENT ITEM	TRI-VISION		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	RATING SYS. DOWNLOAD SIGNAL A/B (PRCC SIG) INCLUDED SIGNAL.		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	CONFIRMATION BY CRT SCREEN		
ADJUSTMENT PROCEDURE	**(DOWNLOADING CONFIRMATION)** 1) RECEIVE THE DOWNLOAD A SIGNAL. 2) SELECT V-CHIP CONTROL MENU THEN ON THE DOWNLOAD. 3) UNPLUG THE AC THEN PLUG AGAIN. 4) BACK TO V-CHIP CONTROL MENU, CHECK THE DOWNLOADED RATIING AND NAME. **(UPLOADING CONFIRMATION)** 1) RECEIVE THE DOWNLOAD B SIGNAL. 2) UNPLUG THE AC CORD AND PLUG IT AGAIN. 3) BACK TO V-CHIP CONTROL MENU, CHECK THE DOWNLOADED RATING AND NAME. ∗ Do check one sample that been picked up for presenting the specified group sample.		
	[COMFIRMATION]		

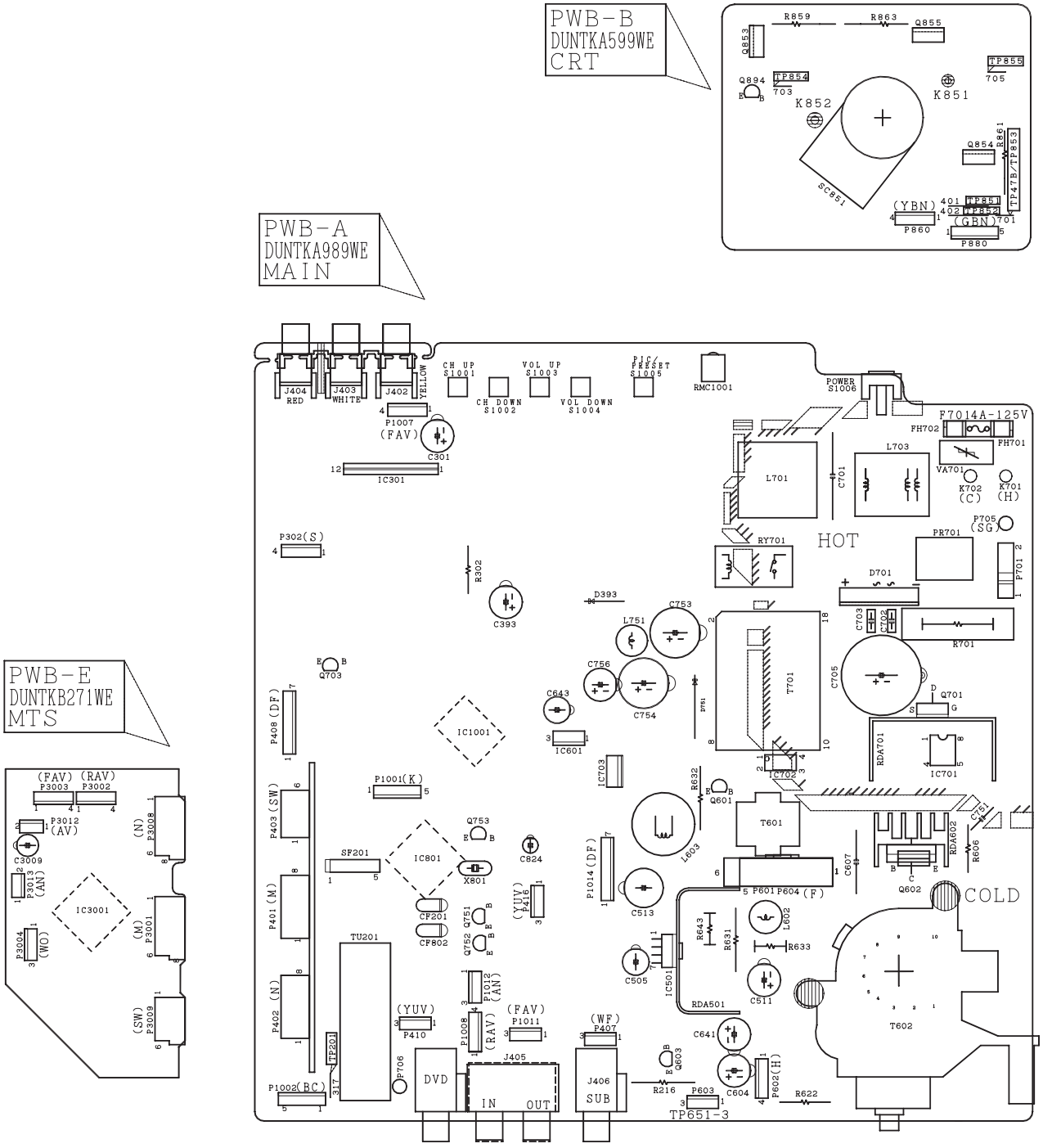
ADJUSTMENT ITEM	MS LEVEL ADJUSTMENT		
ADJUSTMENT POSITION	M01	STEP RANGE	0~15
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC		
CONTENT	NO SIGNAL SIGNAL (400HZ 100% MODULATION)		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	IC 3001 39 PIN		
ADJUSTMENT PROCEDURE	1) SET THE SOUND VOLUME CONTROL MORE THAN 1. 2) ADJUST BUS DATA OF **M01** UNTIL THE VOLTAGE OF 39 PIN BECOME AS SPECIFIED BELOW.		
	[CHECKING SPEC] 490 ± 10mVrms (CHECKING SPEC :490 ± 20mVrms)		

ADJUSTMENT ITEM	MTS+VCO ADJUSTMENT		
ADJUSTMENT POSITION	M02	STEP RANGE	0~63
CONTROL	I²C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC		
CONTENT	SIGNAL WITHOUT NOISE (SIGNAL WITHOUT SOUND MODULATION)		
INPUT CONDITION	AC 120V		
OUTPUT	IC 3001 39 PIN		
ADJUSTMENT PROCEDURE	1) CONNECT 100 µ F ELECTROLLYTIC CAPACITOR BETWEEN C3005 (-ve)-GND 2) ADJUST THE BUS DATA **M02** UNTIL THE OUTPUT FREQUENCY OF 39 PIN BECOME AS SPECIFIED BELOW. **NOTE: TO MINIMIZE THE PRODUCTION TIME, ITEM 1) CAN IGNORE. IF ITEM 2) CAN'T BE ADJUST, THEN ITEM 1) IS REQUIRE.**		
	[CHECKING SPEC] 62.94 ± 0.75kHz (CHECKING SPEC : 62.94 ± 1.20kHz)		

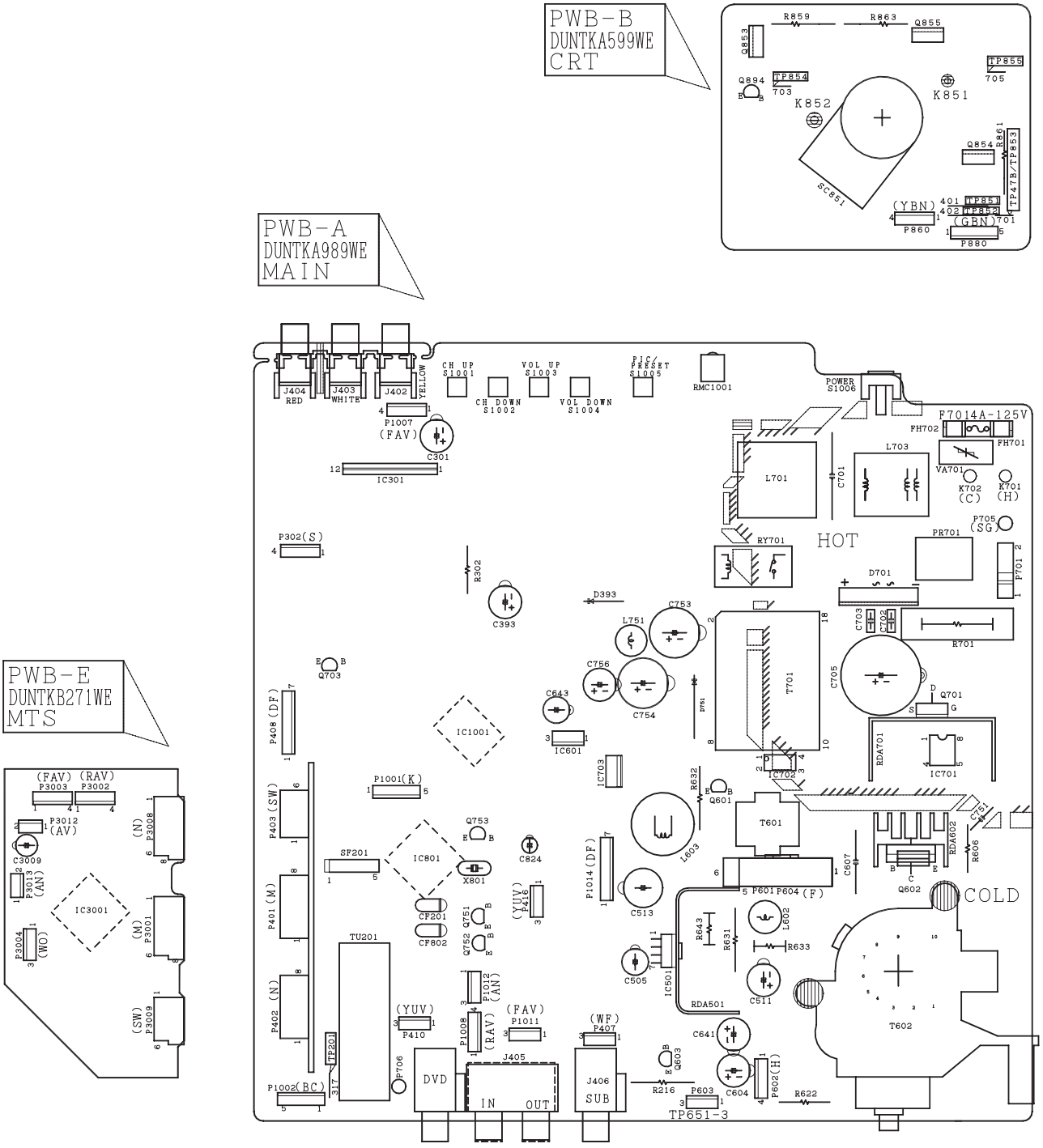
ADJUSTMENT ITEM	FILTER ADJUSTMENT		
ADJUSTMENT POSITION	M03	STEP RANGE	0~63
CONTROL	I²C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC, MS-LEVEL, MTS-VCO		
CONTENT	SINE WAVE (9.4kHz, 600mVrms)		
INPUT CONDITION	PIN 14 (FROM C3005 - TERMINAL)		
OUTPUT	CONFIRM BY CRT SCREEN		
ADJUSTMENT PROCEDURE	1) ADJUST **M03** DATA UNITILL **OK** DISPLAY ON SCREEN ADJUST THE BUS DATA IN CENTRE OF THE RANGE.		
	[CHECKING SPEC] REFER TO ABOVE (CHECKING SPEC : ± 2 STEP TO CENTRE)		

ADJUSTMENT ITEM	SEPARATION ADJUSTMENT		
ADJUSTMENT POSITION	M04, M05	STEP RANGE	0~63
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC, MS-LEVEL, MTS-VCO, FILTER		
CONTENT	STEREO SIGNAL SIGNAL 1,: MODULATION 30%, L-CH ONLY, NR-ON, 300Hz SIGNAL 2,: MODULATION 30%, L-CH ONLY, NR-ON, 3kHz		
INPUT CONDITION	RF INPUT		
OUTPUT	IC 3001 39 PIN		
ADJUSTMENT PROCEDURE	1) INPUT SIGNAL 1, ADJUST BUS DATA OF M04 UNIT THE OF 39 PIN BECOME MINIMUM LEVEL. 2) INPUT SIGNAL 1, ADJUST BUS DATA OF M04 UNIT THE AC VOLTAGE OF 39 PIN BECOME MINIMUM LEVEL. 3) REPEAT STEP 1) AND 2). SET THE SOUND VOLUME TO MAXIMUM THEN MAKE SURE THE READING FROM THE SPEAKER TERMINAL MUST BE OVER THE SPEC AS SPECIFIED BELOW.		
	[CHECKING SPEC] OVER 25 dB (CHECKING SPEC : OVER 20 dB)		

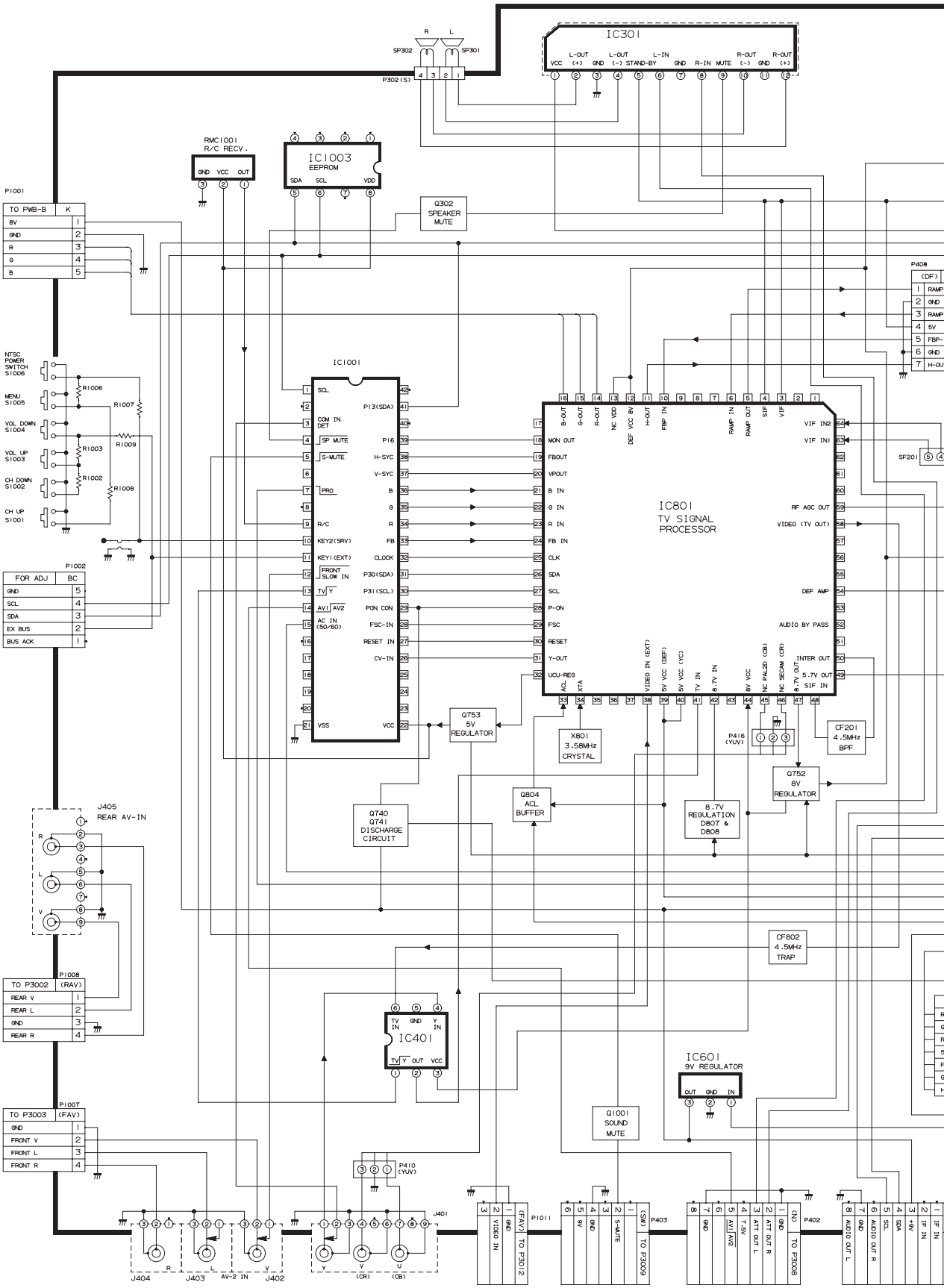
MODEL 20F630 CHASSIS LAYOUT

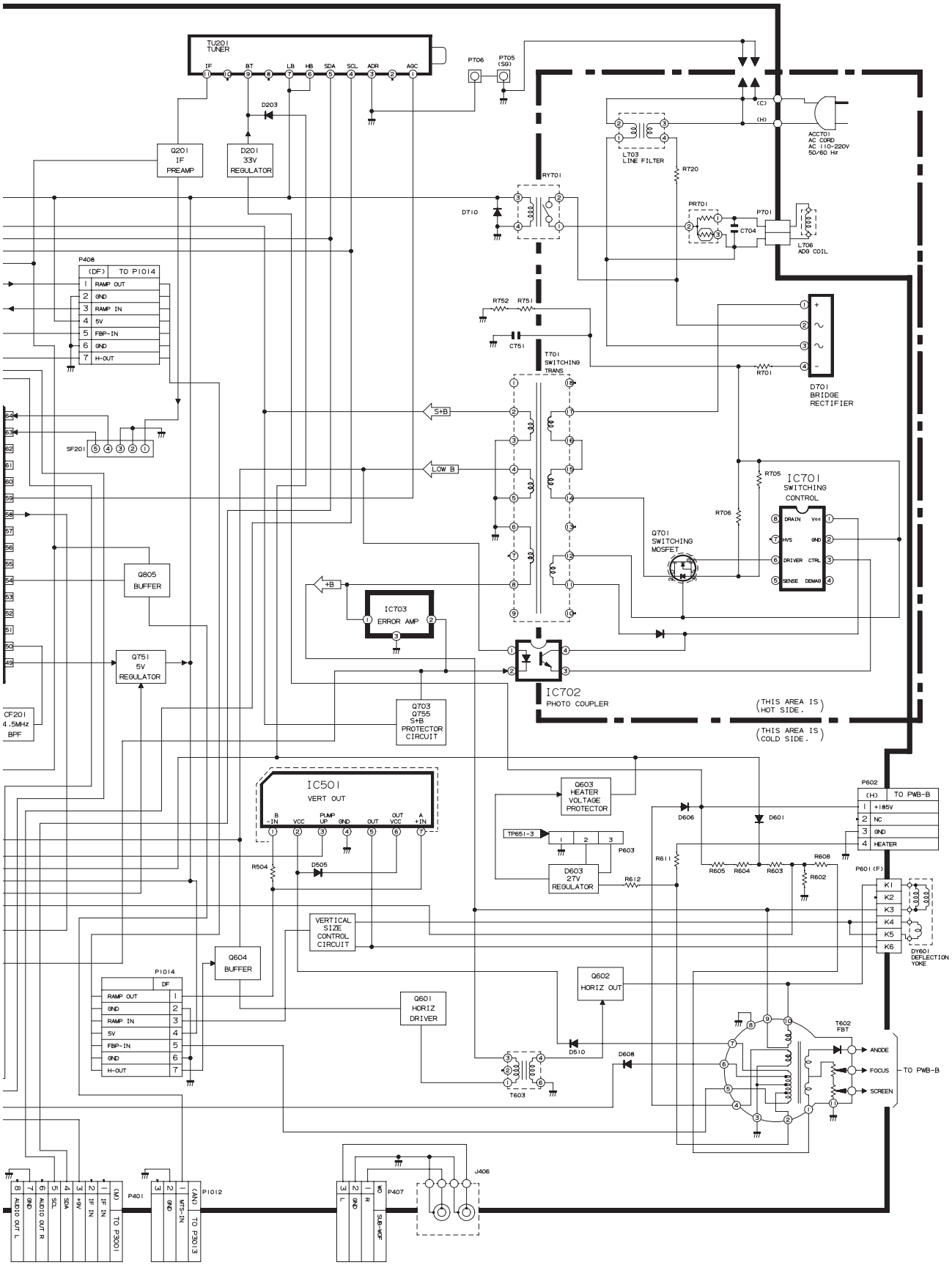


MODEL CU20F630 CHASSIS LAYOUT

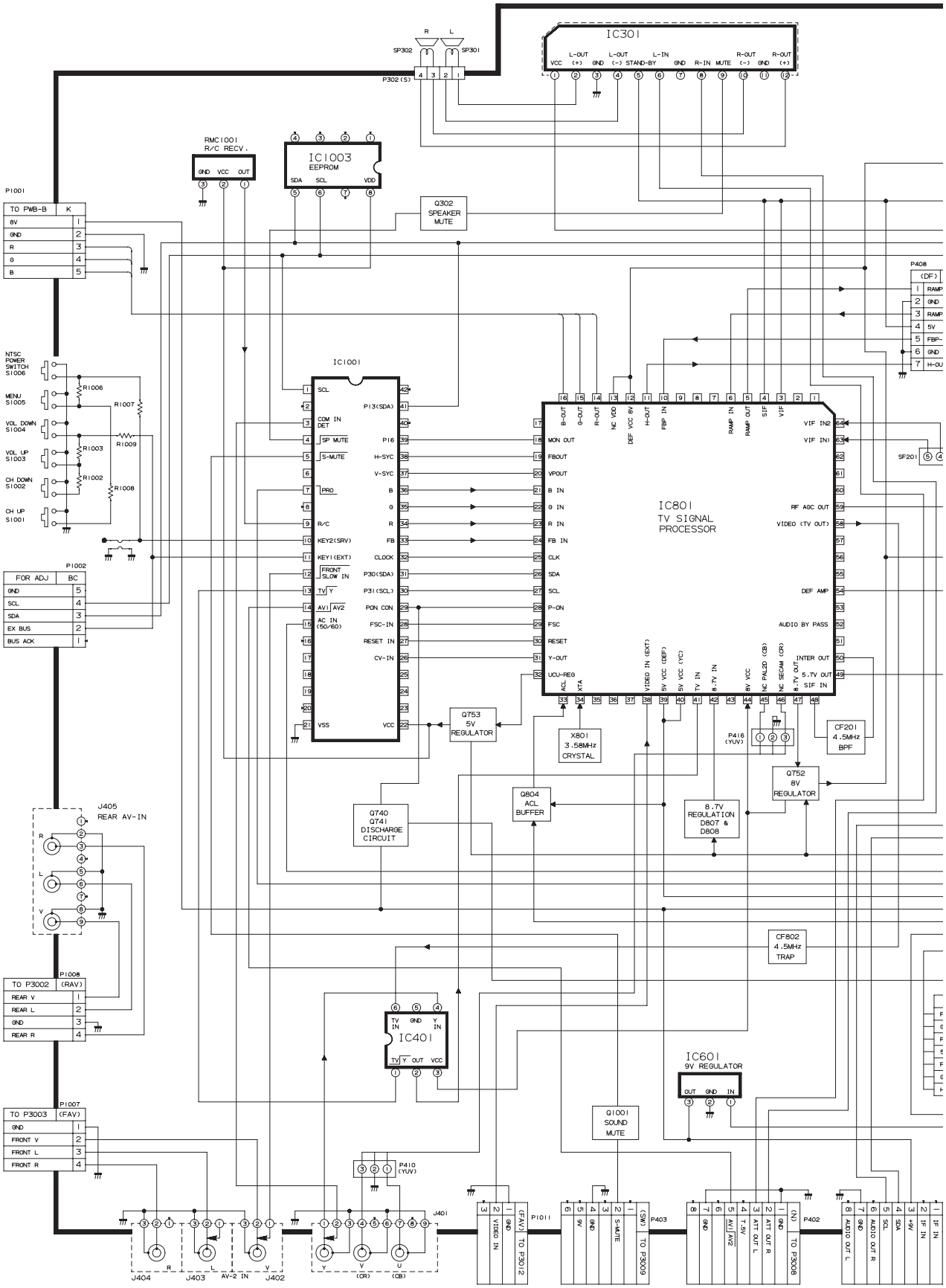


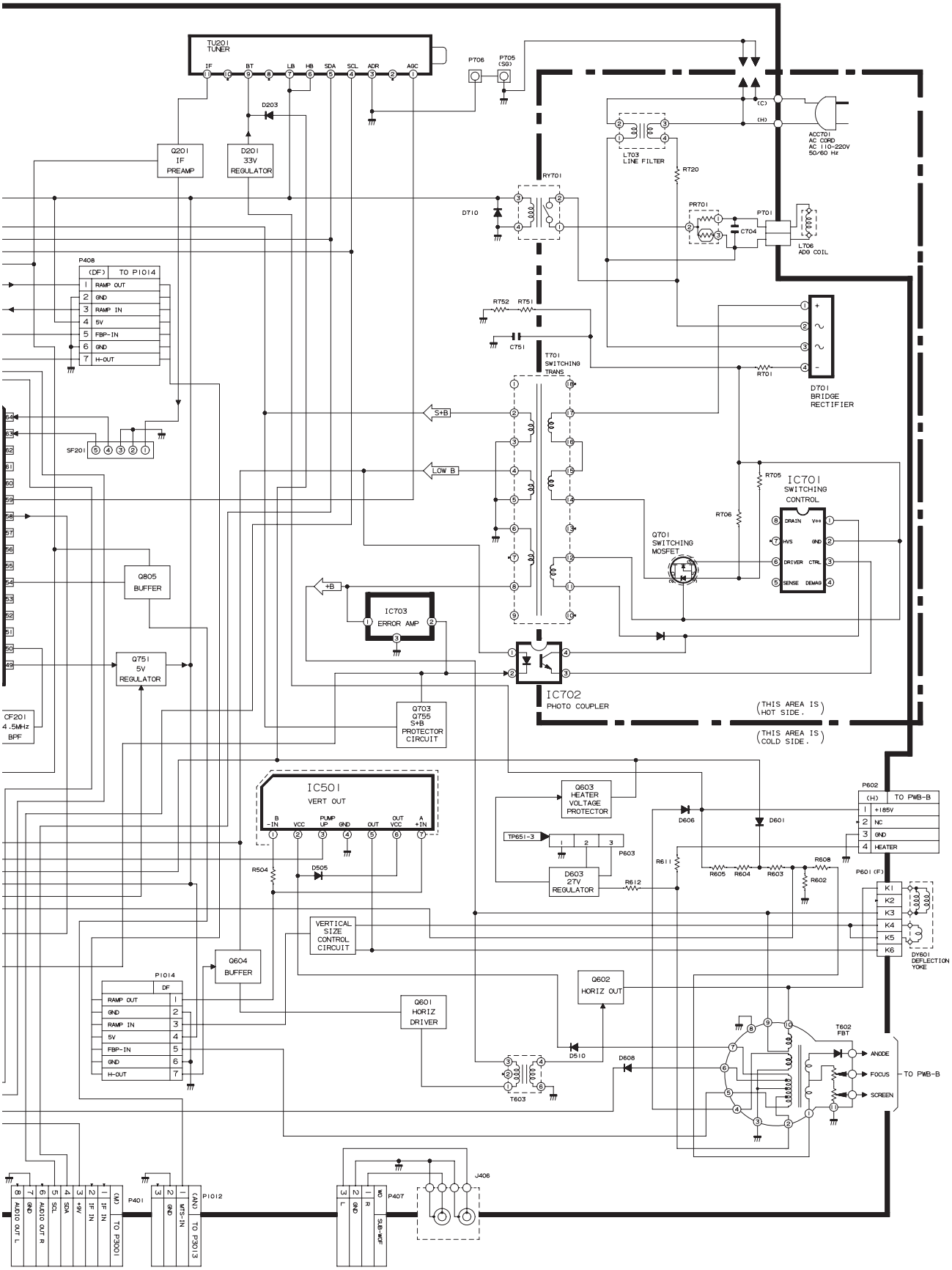
MODEL 20F630 BLOCK DIAGRAM: MAIN Unit



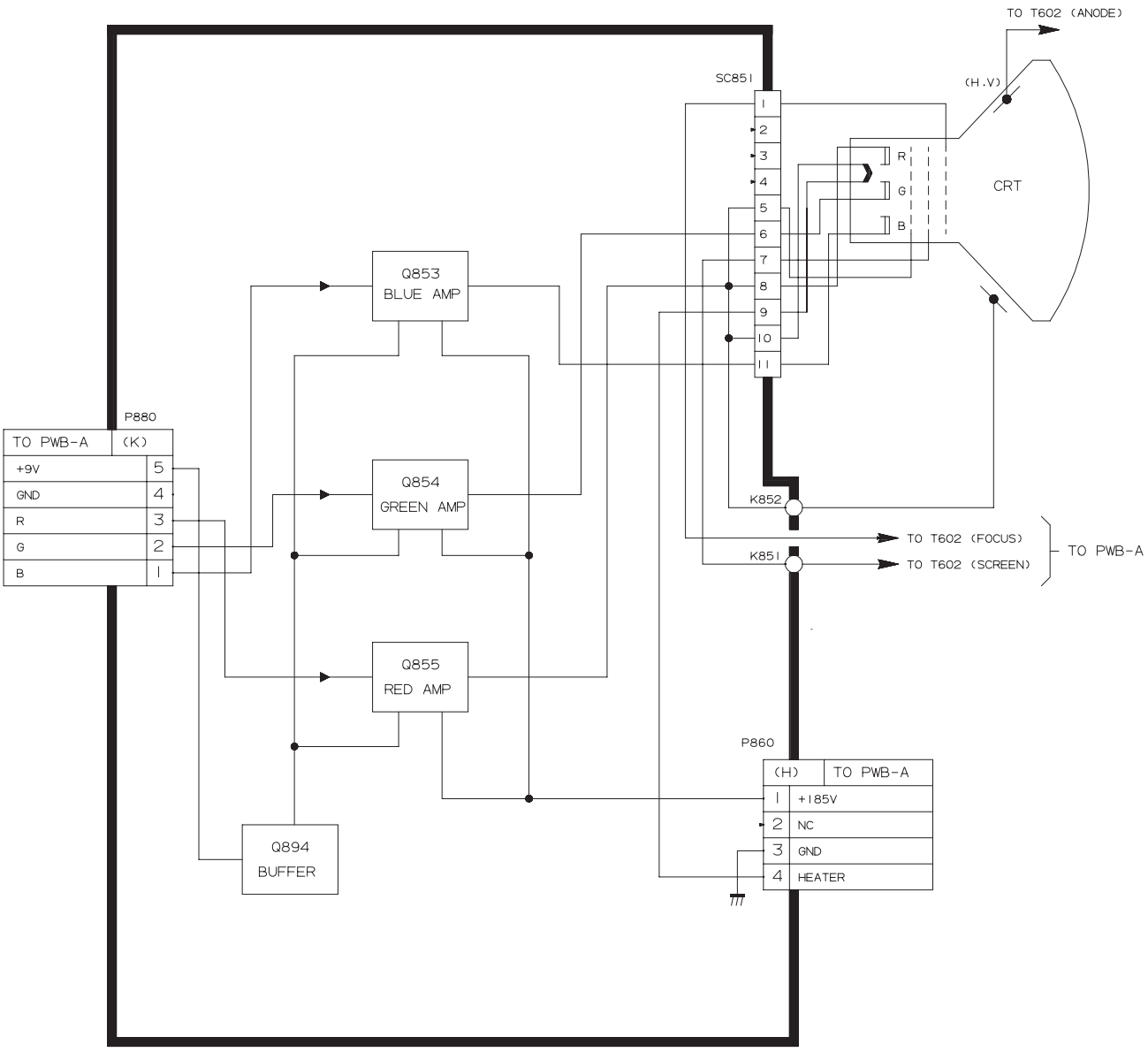

TU201
TUNER
IF
BT
LB
HB
SDA
SCL
ADR
AGC
P706
P705
(SG)
D203
Q201
IF
PREAMP
D201
33V
REGULATOR
RY701
D710
L703
LINE FILTER
R720
ACC701
AC CORD
AC 110-220V
50/60 Hz
(C)
(H)
PR701
P701
C704
L706
ADJ COIL
P408
(DF)
TO P1014
RAMP OUT
GND
RAMP IN
5V
FBP-IN
GND
H-OUT
R752
R751
C751
T701
SWITCHING
TRANS.
R701
D701
BRIDGE
RECTIFIER
S+B
LOW B
SF201
R705
IC701
SWITCHING
CONTROL
R706
DRAIN
Vcc
AVS
GND
DRIVER
CTRL
SENSE
DEMAG
Q701
SWITCHING
MOSFET
Q805
BUFFER
+B
IC703
ERROR AMP
Q751
5V
REGULATOR
IC702
PHOTO COUPLER
(THIS AREA IS
HOT SIDE.)
(THIS AREA IS
COLD SIDE.)
CF201
4.5MHz
BPF
Q703
Q755
S+B
PROTECTOR
CIRCUIT
IC501
VERT OUT
B
-IN
VCC
PUMP
UP
GND
OUT
OUT
VCC
A
+IN
R504
D505
Q603
HEATER
VOLTAGE
PROTECTOR
TP651-3
P603
D603
27V
REGULATOR
R612
D606
D601
R611
R605
R604
R603
R608
R602
P602
(H)
TO PWB-B
+185V
NC
GND
HEATER
P601(F)
K1
K2
K3
K4
K5
K6
DY601
DEFLECTION
YOKE
VERTICAL
SIZE
CONTROL
CIRCUIT
Q604
BUFFER
P1014
DF
RAMP OUT
GND
RAMP IN
5V
FBP-IN
GND
H-OUT
Q601
HORIZ
DRIVER
Q602
HORIZ OUT
D510
D608
T603
T602
FBT
ANODE
FOCUS
SCREEN
TO PWB-B
AUDIO OUT L
GND
AUDIO OUT R
SCL
SDA
+9V
IF IN
IF IN
(M)
TO P3001
P401
GND
MTS-IN
(AN)
TO P3013
P1012
L
GND
R
SUB-WOF
NO
P407
J406

MODEL CU20F630 BLOCK DIAGRAM: MAIN Unit

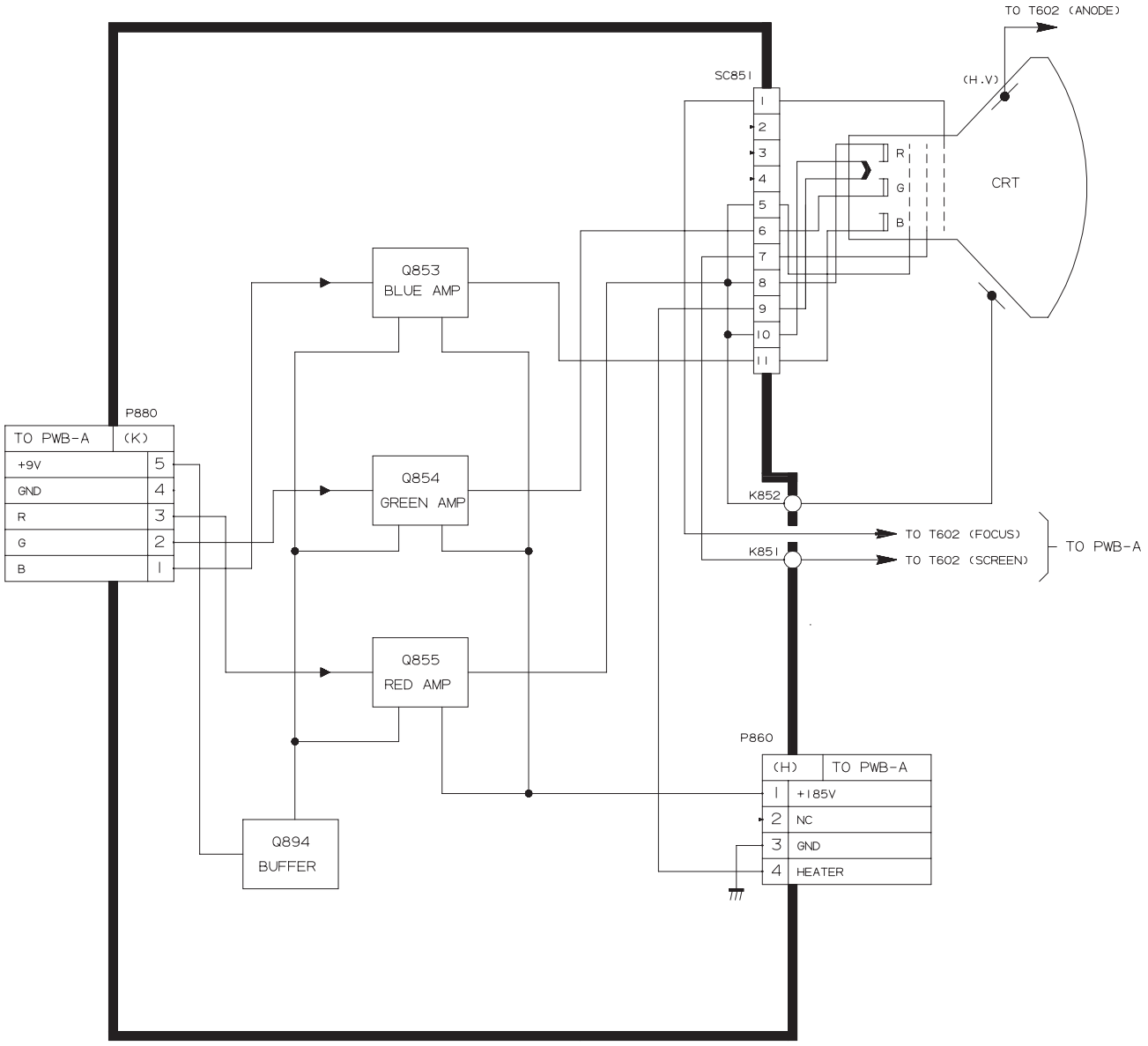



TU201 TUNER
IF BT LB HB SDA SCL ADR AGC
P706
P705 (SG)
D203
Q201 IF PREAMP
D201 33V REGULATOR
ACC701 AC CORD AC 110-220V 50/60 Hz
L703 LINE FILTER
R720
RY701
D710
PR701
P701
C704
L706 AGC COIL
P408
(DF) TO P1014
1 RAMP OUT
2 GND
3 RAMP IN
4 5V
5 FBP-IN
6 GND
7 H-OUT
R752 R751
C751
T701 SWITCHING TRANS
R701
D701 BRIDGE RECTIFIER
S+B
LOW B
SF201
R705
IC701 SWITCHING CONTROL
R706
Q701 SWITCHING MOSFET
DRAIN Vcc
HVS GND
DRIVER CTRL
SENSE DEMAG
Q805 BUFFER
+B
IC703 ERROR AMP
Q751 5V REGULATOR
IC702 PHOTO COUPLER
(THIS AREA IS HOT SIDE.)
(THIS AREA IS COLD SIDE.)
CF201 4.5MHz BPF
Q703 Q755 S+B PROTECTOR CIRCUIT
IC501 VERT OUT
B -IN VCC PUMP UP GND OUT OUT VCC A +IN
R504
D505
Q603 HEATER VOLTAGE PROTECTOR
TP651-3
P603
D603 27V REGULATOR
R612
D606
D601
P602
(H) TO PWB-B
1 +185V
2 NC
3 GND
4 HEATER
R611
R605 R604 R603
R608
R602
P601 (F)
K1 K2 K3 K4 K5 K6
DY601 DEFLECTION YOKE
VERTICAL SIZE CONTROL CIRCUIT
Q604 BUFFER
P1014
DF
RAMP OUT 1
GND 2
RAMP IN 3
5V 4
FBP-IN 5
GND 6
H-OUT 7
Q601 HORIZ DRIVER
Q602 HORIZ OUT
D510
D608
T603
T602 FBT
ANODE
FOCUS
SCREEN
TO PWB-B
P401
8 AUDIO OUT L
7 GND
6 AUDIO OUT R
5 SCL
4 SDA
3 +9V
2 IF IN
1 IF IN (M)
TO P3001
P1012
3 GND
2 MTS-IN
1 (AN)
TO P3013
P407
3 L
2 GND
1 R
NC
SUB-WOOF
J406

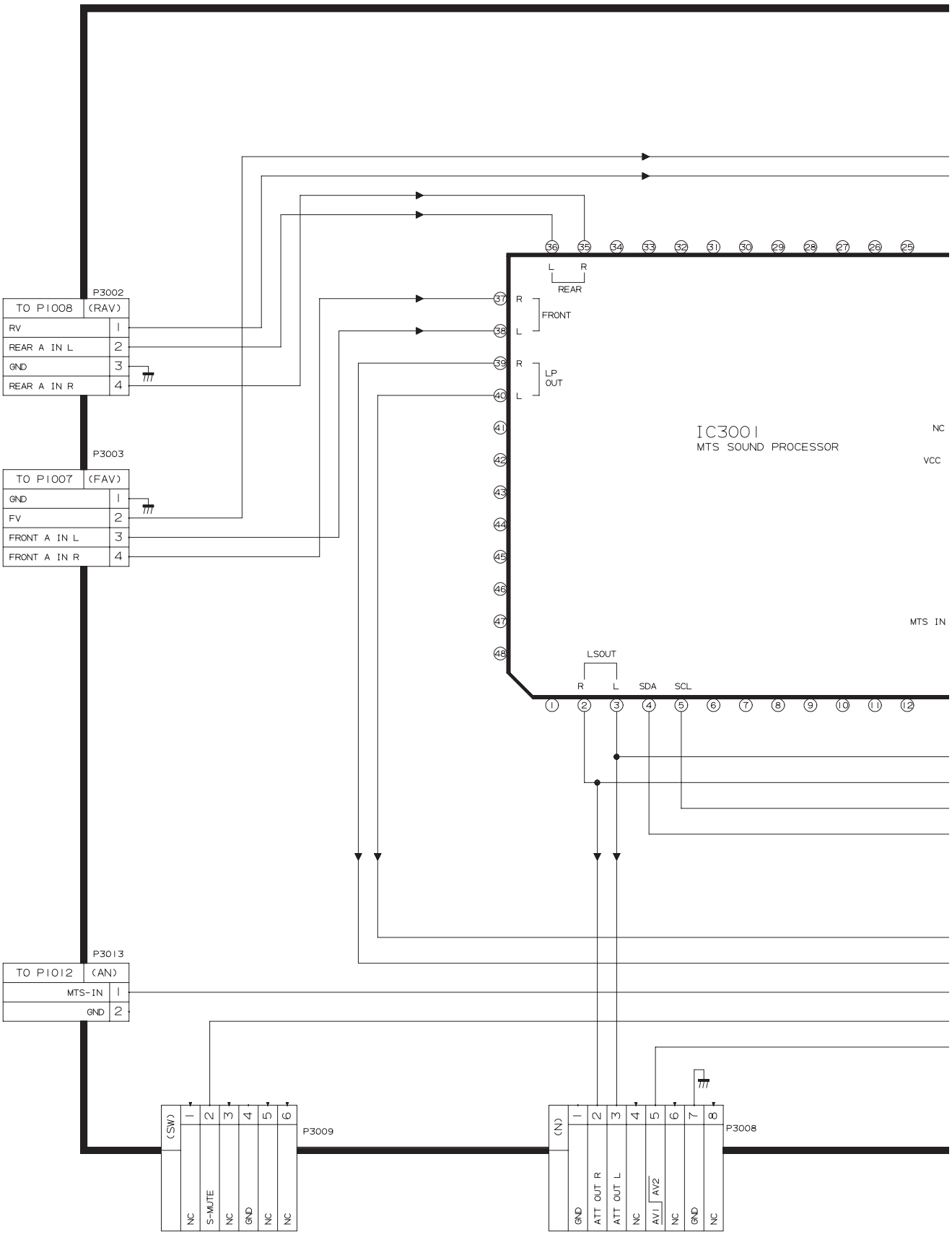
MODEL 20F630 BLOCK DIAGRAM: CRT Unit

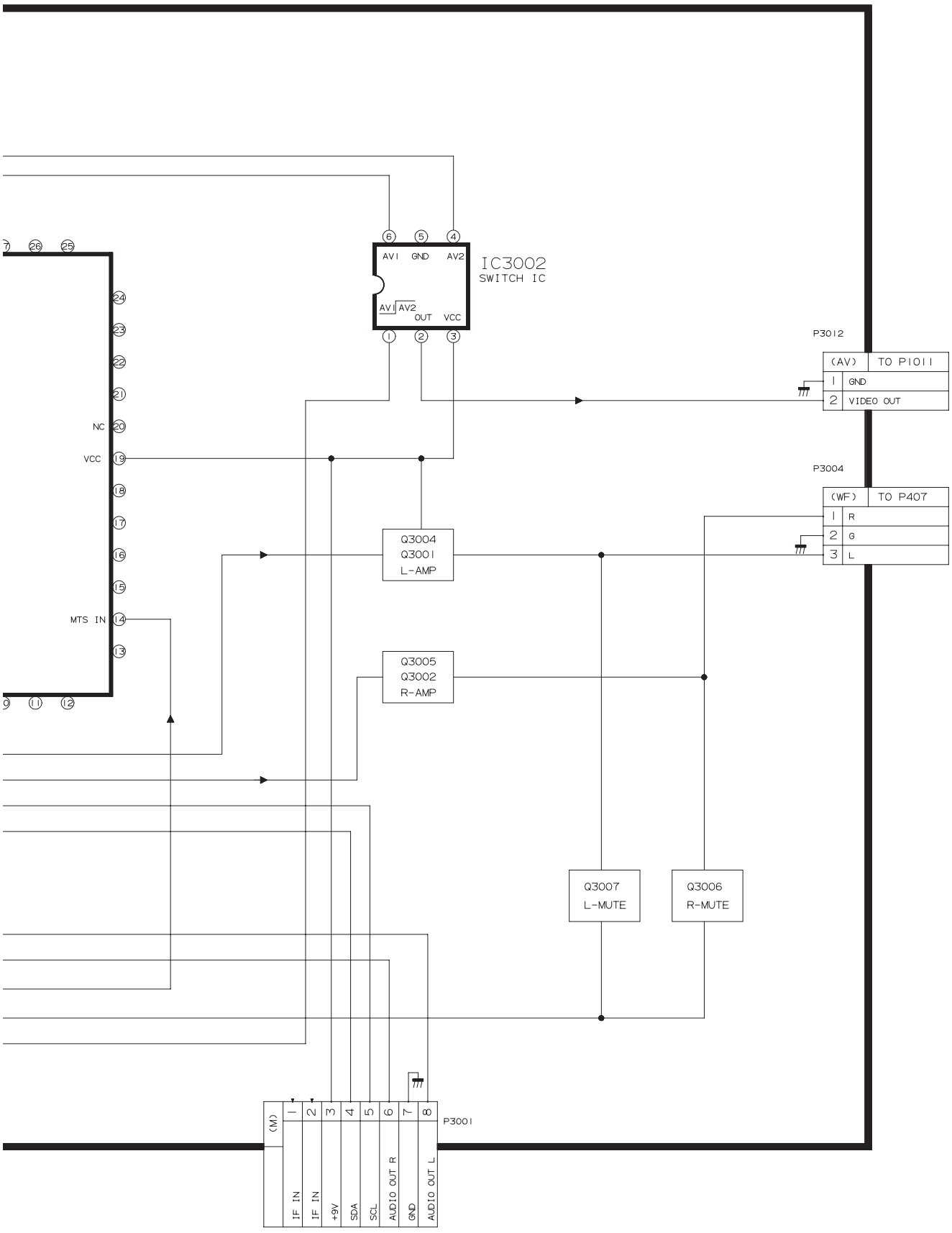


MODEL CU20F630 BLOCK DIAGRAM: CRT Unit

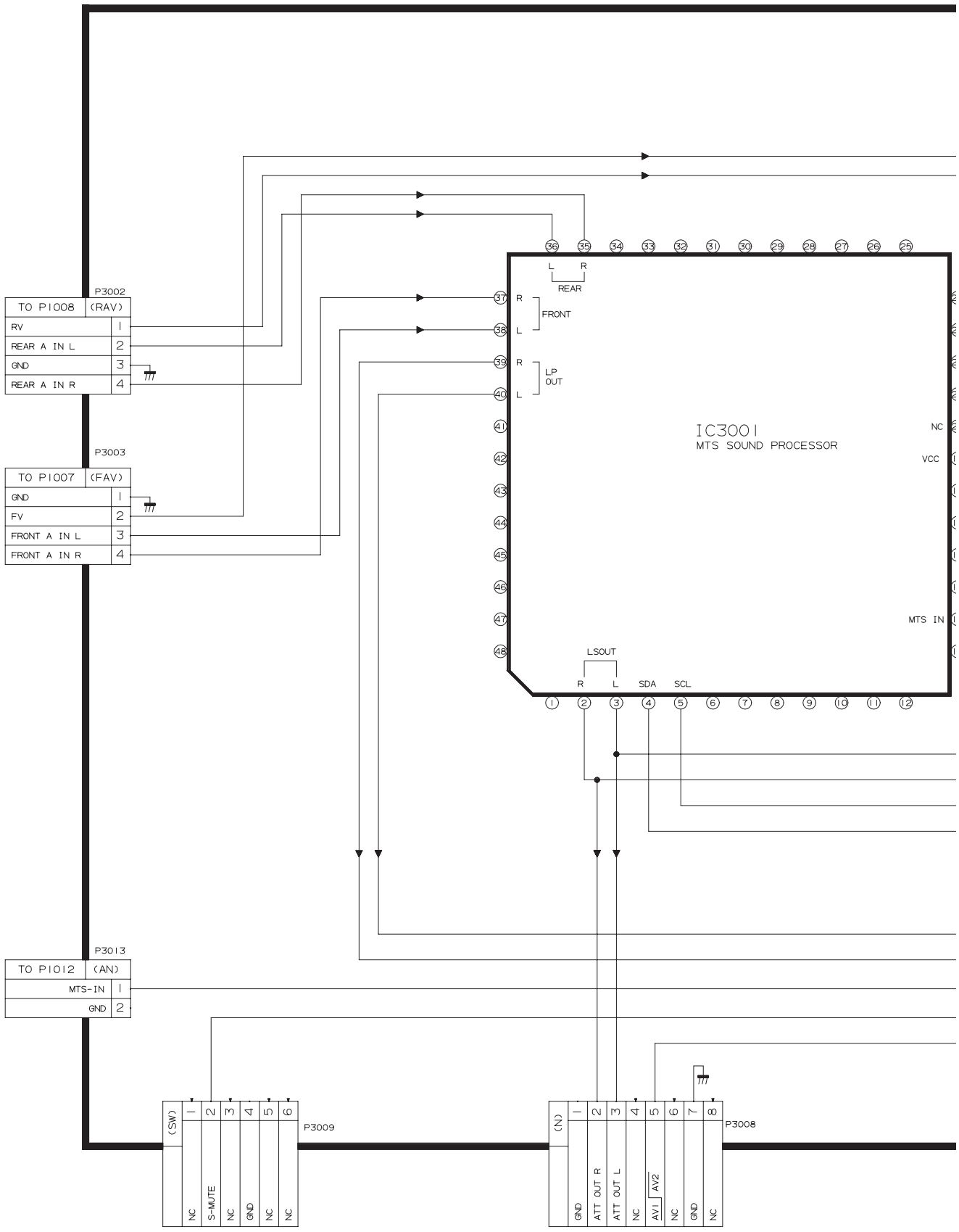


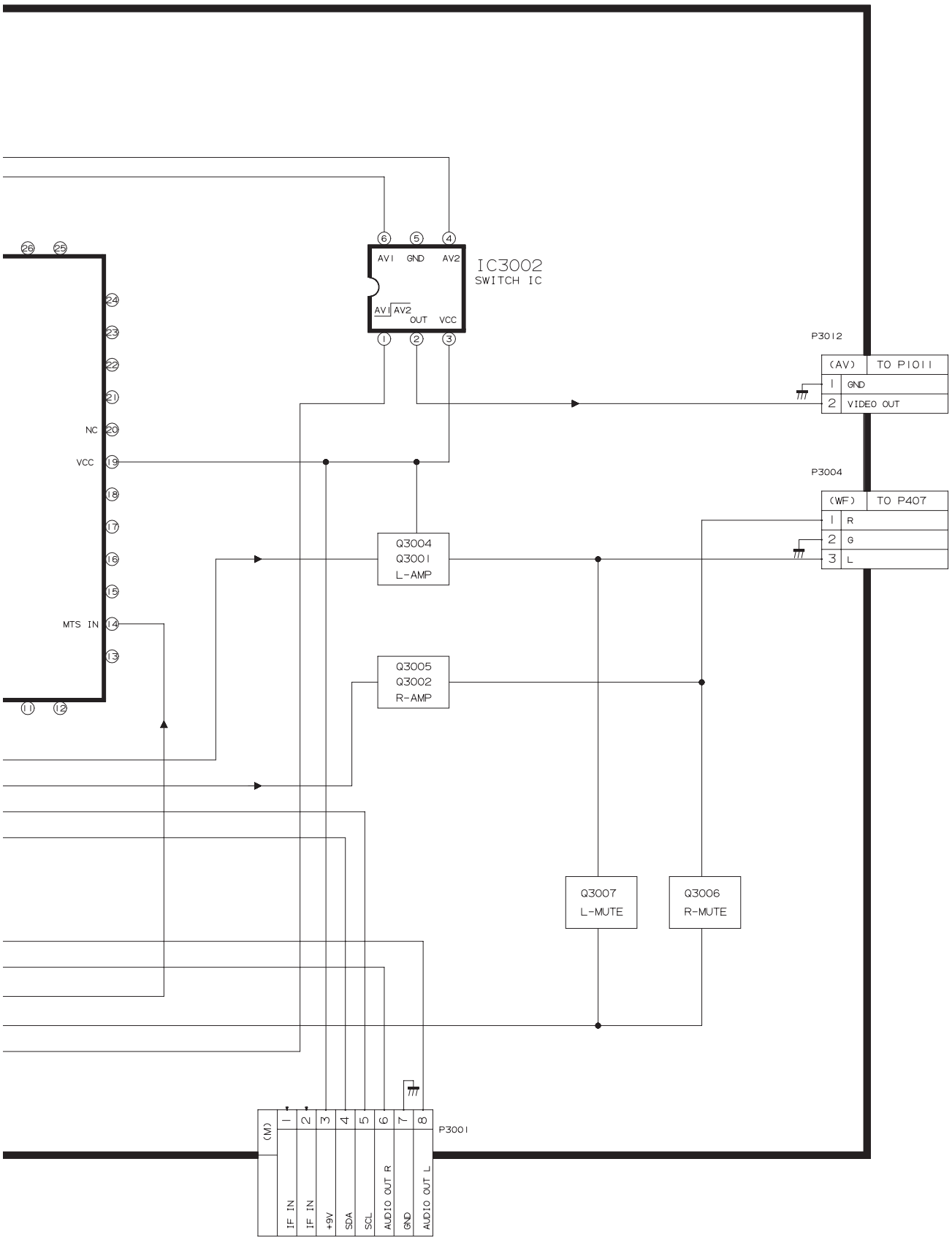
MODEL 20F630 BLOCK DIAGRAM: MTS MODULE Unit




IC3002
SWITCH IC
AV1 GND AV2
AV1 AV2
OUT VCC
NC
VCC
MTS IN
P3012
(AV) TO P1011
1 GND
2 VIDEO OUT
P3004
(WF) TO P407
1 R
2 G
3 L
Q3004
Q3001
L-AMP
Q3005
Q3002
R-AMP
Q3007
L-MUTE
Q3006
R-MUTE
P3001
(M)
1 IF IN
2 IF IN
3 +9V
4 SDA
5 SCL
6 AUDIO OUT R
7 GND
8 AUDIO OUT L

MODEL 20F630 BLOCK DIAGRAM: MTS MODULE Unit




IC3002
SWITCH IC
AV1 GND AV2
AV1 AV2
OUT VCC
NC
VCC
MTS IN
Q3004
Q3001
L-AMP
Q3005
Q3002
R-AMP
Q3007
L-MUTE
Q3006
R-MUTE
P3012
(AV) TO P1011
1 GND
2 VIDEO OUT
P3004
(WF) TO P407
1 R
2 G
3 L
P3001
(M)
1 IF IN
2 IF IN
3 +9V
4 SDA
5 SCL
6 AUDIO OUT R
7 GND
8 AUDIO OUT L

DESCRIPTION OF SCHEMATIC DIAGRAM

NOTES:

1. *The unit of resistance "ohm" is omitted. (K=kΩ=1000Ω, M=MΩ)*
2. *All resistors are 1/16 watt, unless otherwise noted.*
3. *All capacitors are μ F, unless otherwise noted. (P=pF=μμF)*
4. *(G) indicates ±2% tolerance may be used.*
5. ⏚ *indicates line isolated ground.*

VOLTAGE MEASUREMENT CONDITIONS:

1. *All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.*
2. *All voltages measured with 1000μ V B & W or Color signal.*

WAVEFORM MEASUREMENT CONDITIONS:

1. *Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.*
2. ⟳ *indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)*

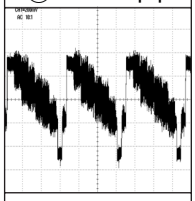
⚠ *AND SHADED ( ) COMPONENTS = SAFETY RELATED PARTS.*
▲ *MARK= X-RAY RELATED PARTS.*

DRGANNES MARQUES ⚠ ET HACHRES ( ): PIECES RELATIVES A LA SECURITE.
MARQUE ▲ : PIECS RELATIVE AUX RAYONS X.

This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

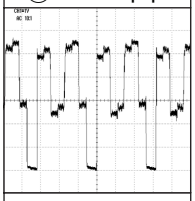
WAVEFORMS

① 1.024 Vp-p



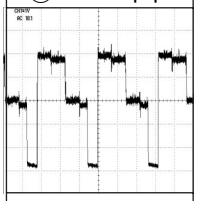
Horiz.Rate

② 5.69 Vp-p



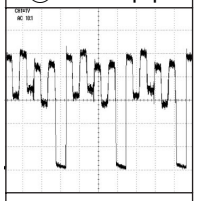
Horiz.Rate

③ 5.69 Vp-p



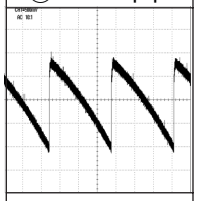
Horiz.Rate

④ 5.84 Vp-p



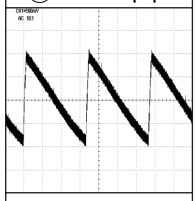
Horiz.Rate

⑤ 2.00 Vp-p



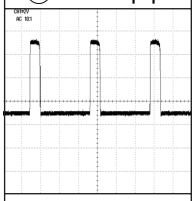
Vert.Rate

⑥ 2.08 Vp-p



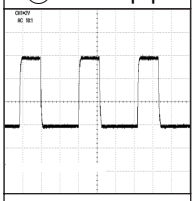
Vert.Rate

⑦ 6.56 Vp-p



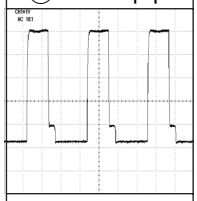
Horiz.Rate

⑧ 6.40 Vp-p



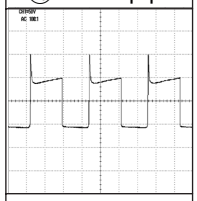
Horiz.Rate

⑨ 4.88 Vp-p



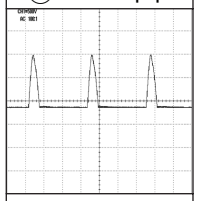
Horiz.Rate

⑩ 158 Vp-p



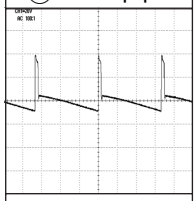
Horiz.Rate

⑪ 1140 Vp-p



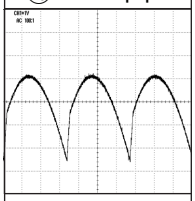
Horiz.Rate

⑫ 48 Vp-p



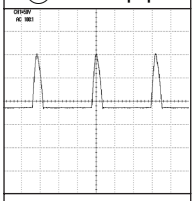
Vert.Rate

⑬ 3.8 Vp-p



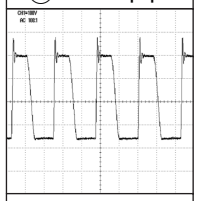
Vert.Rate

⑭ 118 Vp-p



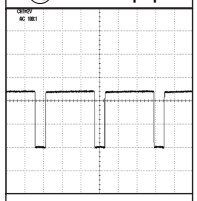
Horiz.Rate

⑮ 440 Vp-p



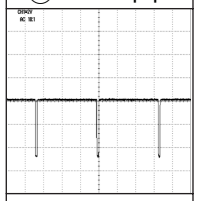
Horiz.Rate

⑯ 5.04 Vp-p



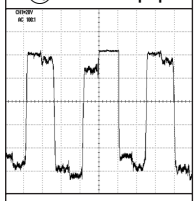
Horiz.Rate

⑰ 5.12 Vp-p



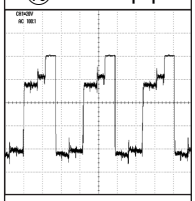
Vert.Rate

⑱ 112.8 Vp-p



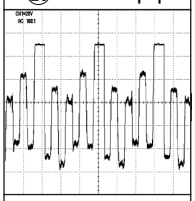
Horiz.Rate

⑲ 94.4 Vp-p



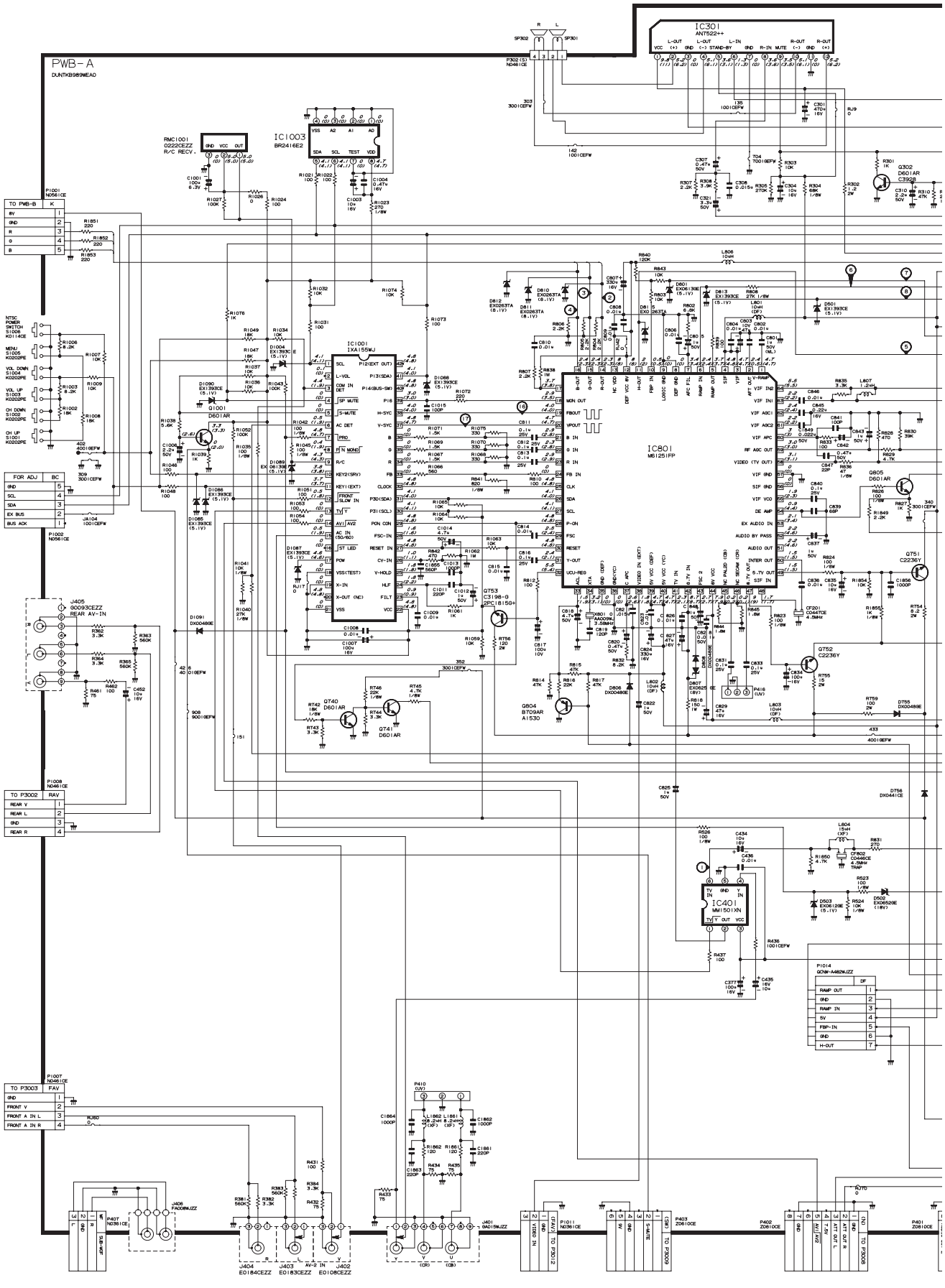
Horiz.Rate

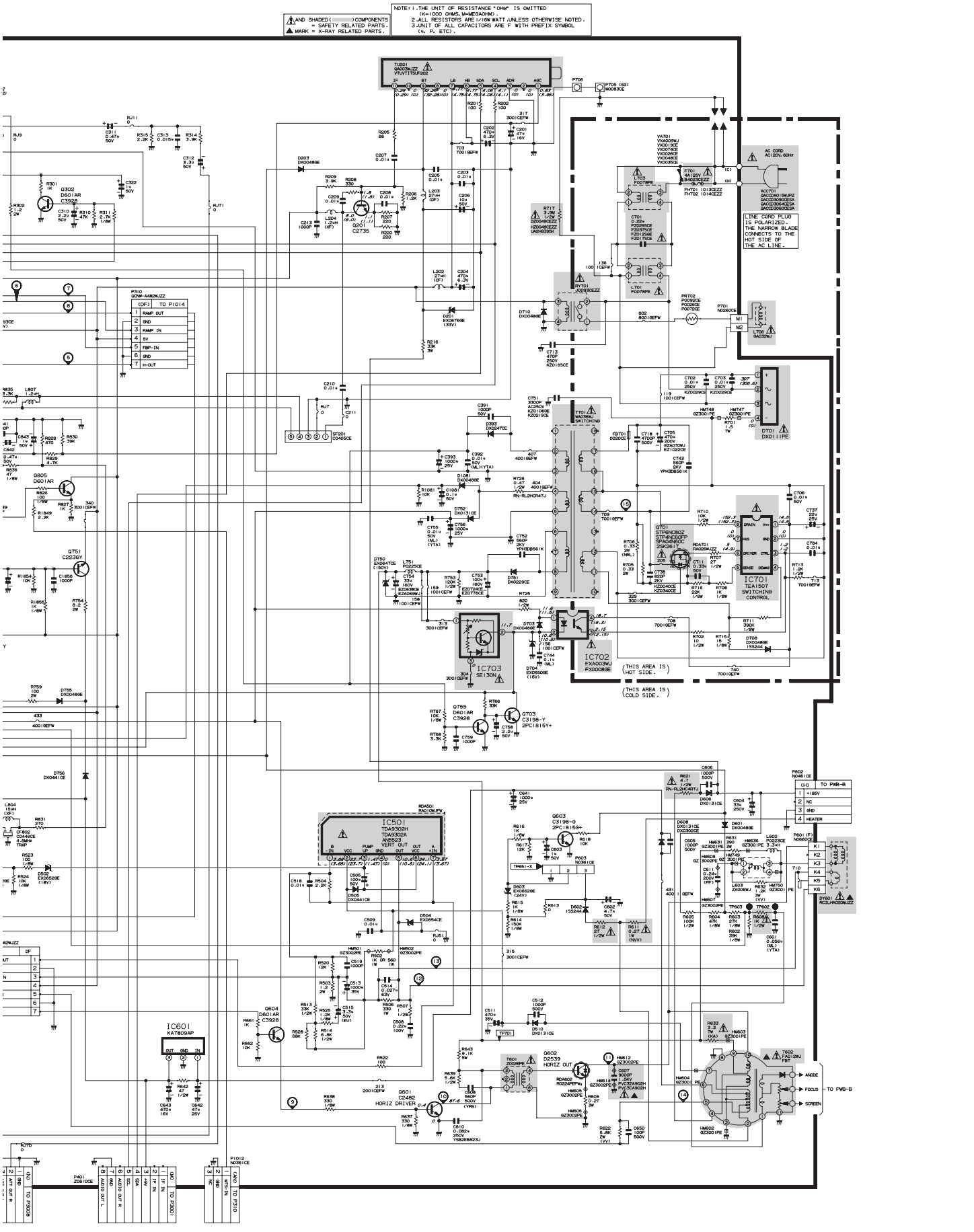
⑳ 109.6 Vp-p



Horiz.Rate

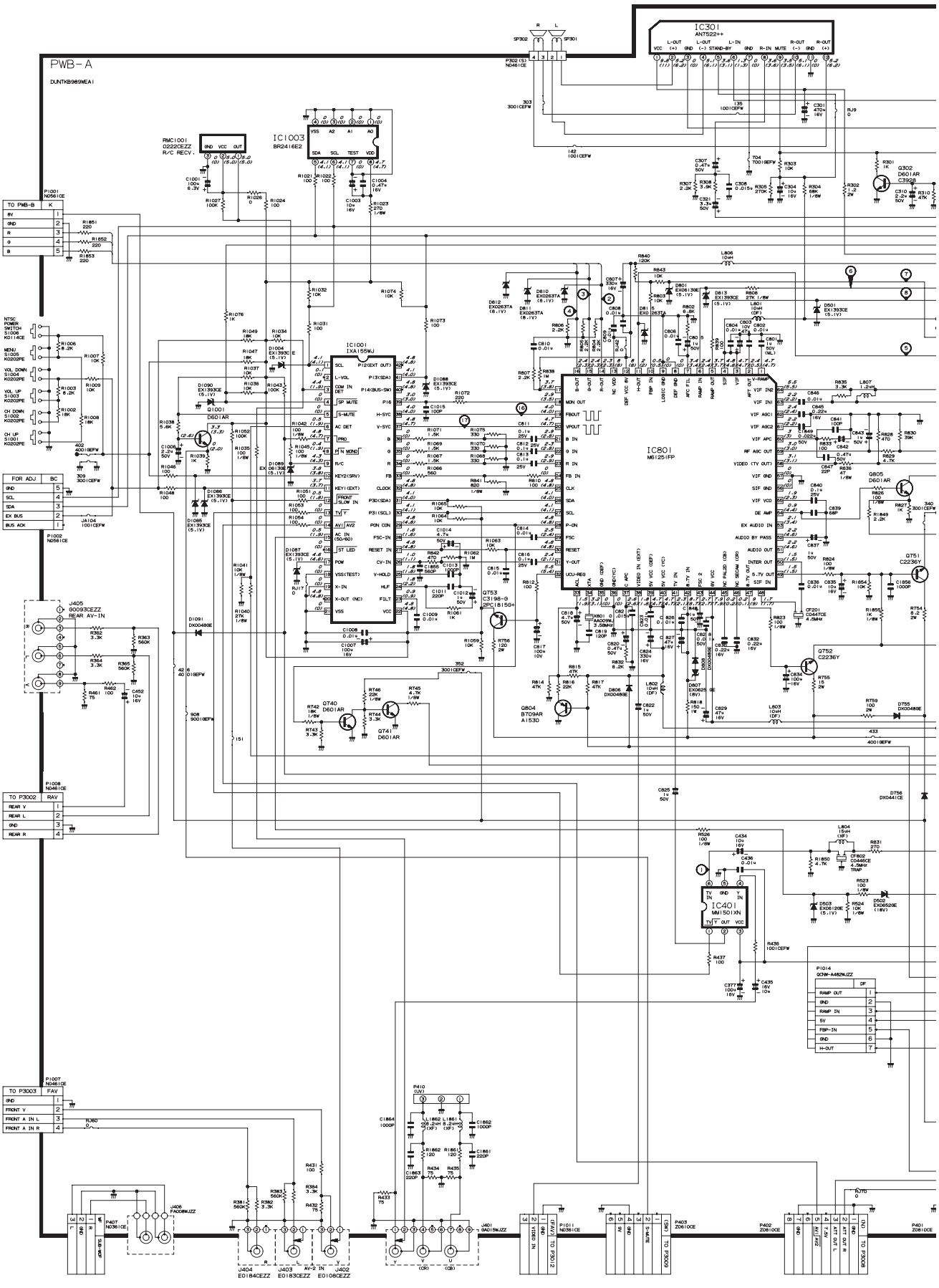
MODEL 20F630 SCHEMATIC DIAGRAM: MAIN Unit

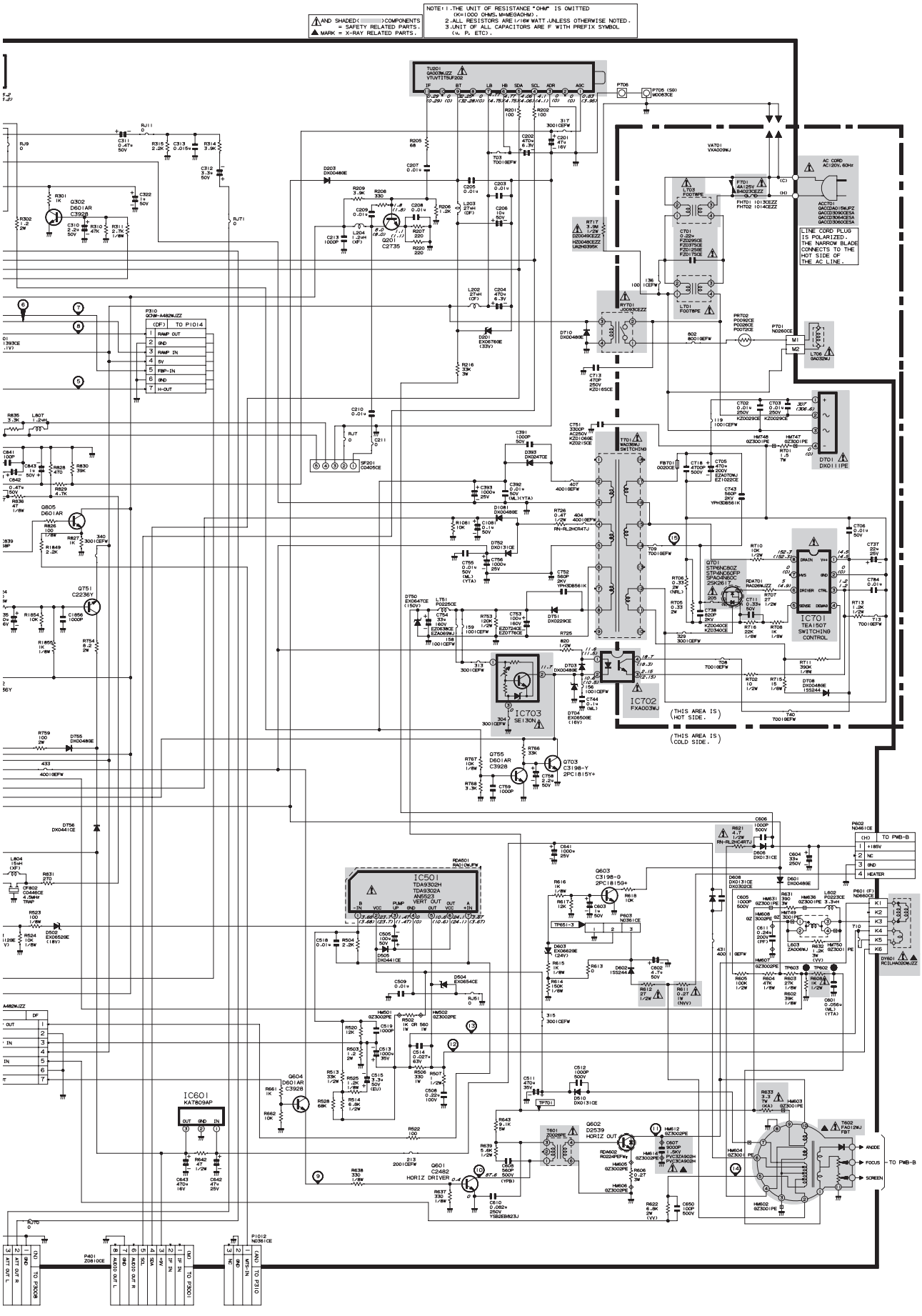



NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED (K=1000 OHMS, M=MEGAOHM).
2.ALL RESISTORS ARE 1/6W WATT UNLESS OTHERWISE NOTED.
3.UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL (u, P, ETC).
AND SHADED( )COMPONENTS = SAFETY RELATED PARTS.
MARK = X-RAY RELATED PARTS.
IC701 TEA1507 SWITCHING CONTROL
IC702 FXA003WJ FX0008GE
IC703 SE130N
IC501 TDA9302H TDA9302A AN5523
IC601 KA7809AP
(THIS AREA IS HOT SIDE.)
(THIS AREA IS COLD SIDE.)
AC CORD AC120V, 60Hz
LINE CORD PLUG IS POLARIZED. THE NARROW BLADE CONNECTS TO THE HOT SIDE OF THE AC LINE.
HORIZ DRIVER
HORIZ OUT
TO PWB-B
ANODE
FOCUS
SCREEN

10	11	12	13	14	15	16	17	18	19

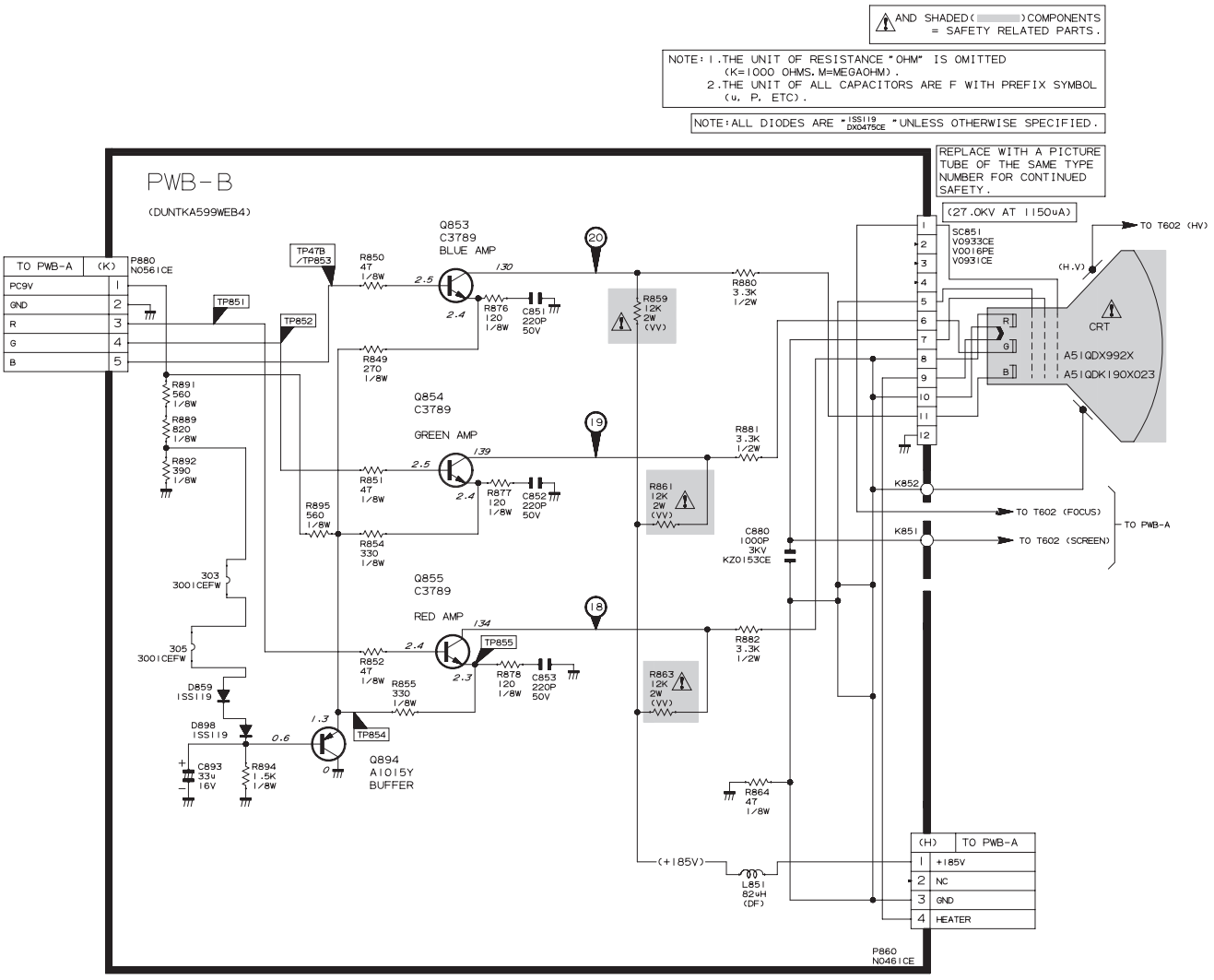
MODEL CU20F630 SCHEMATIC DIAGRAM: MAIN Unit



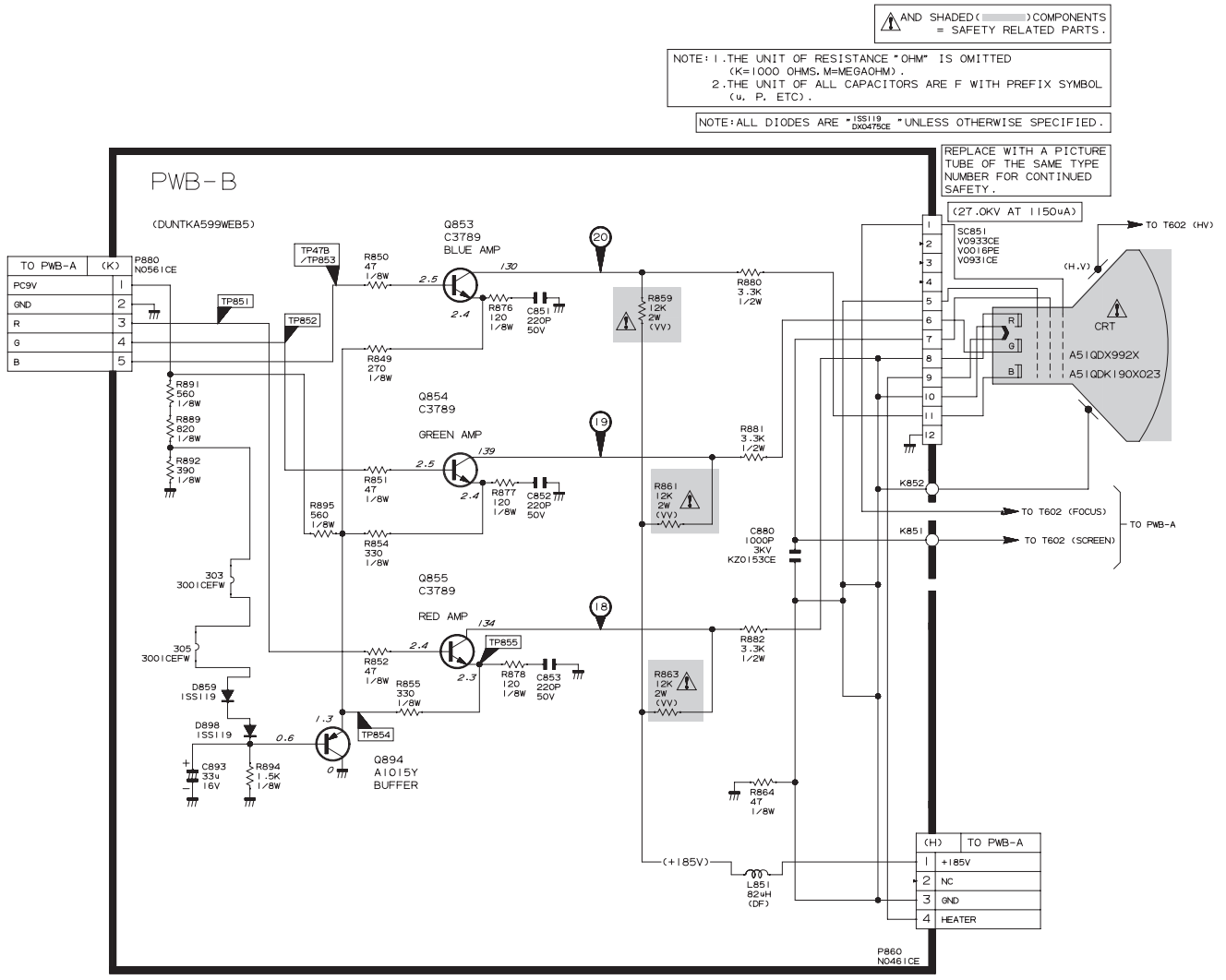

NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=MEGAOHM).
2.ALL RESISTORS ARE 1/6W WATT UNLESS OTHERWISE NOTED.
3.UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL
(u, P, ETC).
AND SHADED( ) COMPONENTS = SAFETY RELATED PARTS.
MARK = X-RAY RELATED PARTS.
IC501 TDA9302H TDA9302A AN5522 VERT OUT
IC601 KA7809AP
IC701 TEA1507 SWITCHING CONTROL
IC703 SE130N
IC702 FXA0039NJ
Q601 C2482 HORIZ DRIVER
Q602 D2539 HORIZ OUT
Q603 C3198-9 2PC1815G+
Q604 D601AR C3928
Q751 C2236Y
Q755 D601AR C3928
Q703 C3198-Y 2PC1815Y+
Q805 D601AR
Q302 D601AR C3928
Q0201 C2735
(THIS AREA IS HOT SIDE.)
(THIS AREA IS COLD SIDE.)
LINE CORD PLUG IS POLARIZED. THE NARROW BLADE CONNECTS TO THE HOT SIDE OF THE AC LINE.
TO PWB-B
ANODE
FOCUS
SCREEN

10	11	12	13	14	15	16	17	18	19

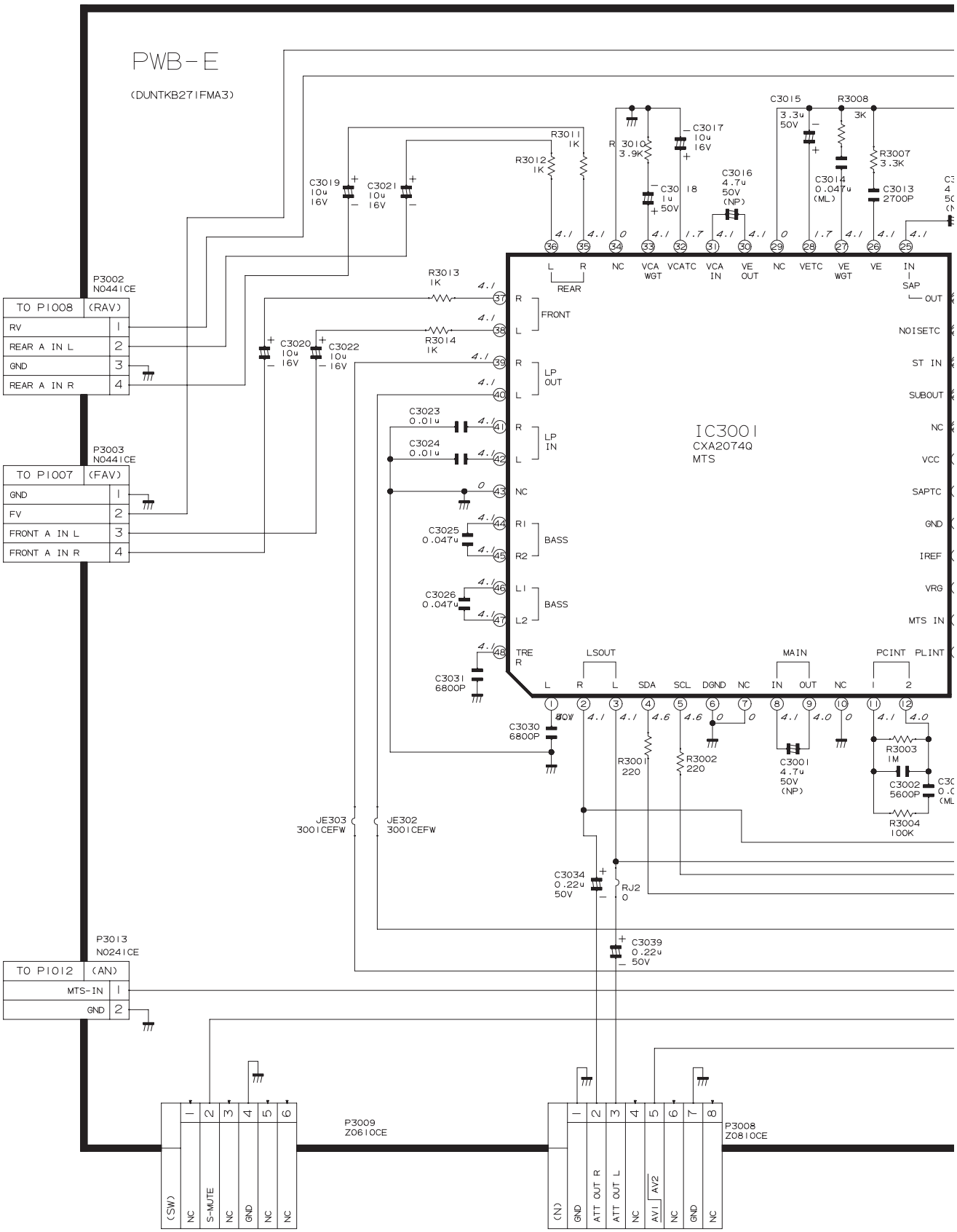
MODEL 20F630 SCHEMATIC DIAGRAM: CRT Unit



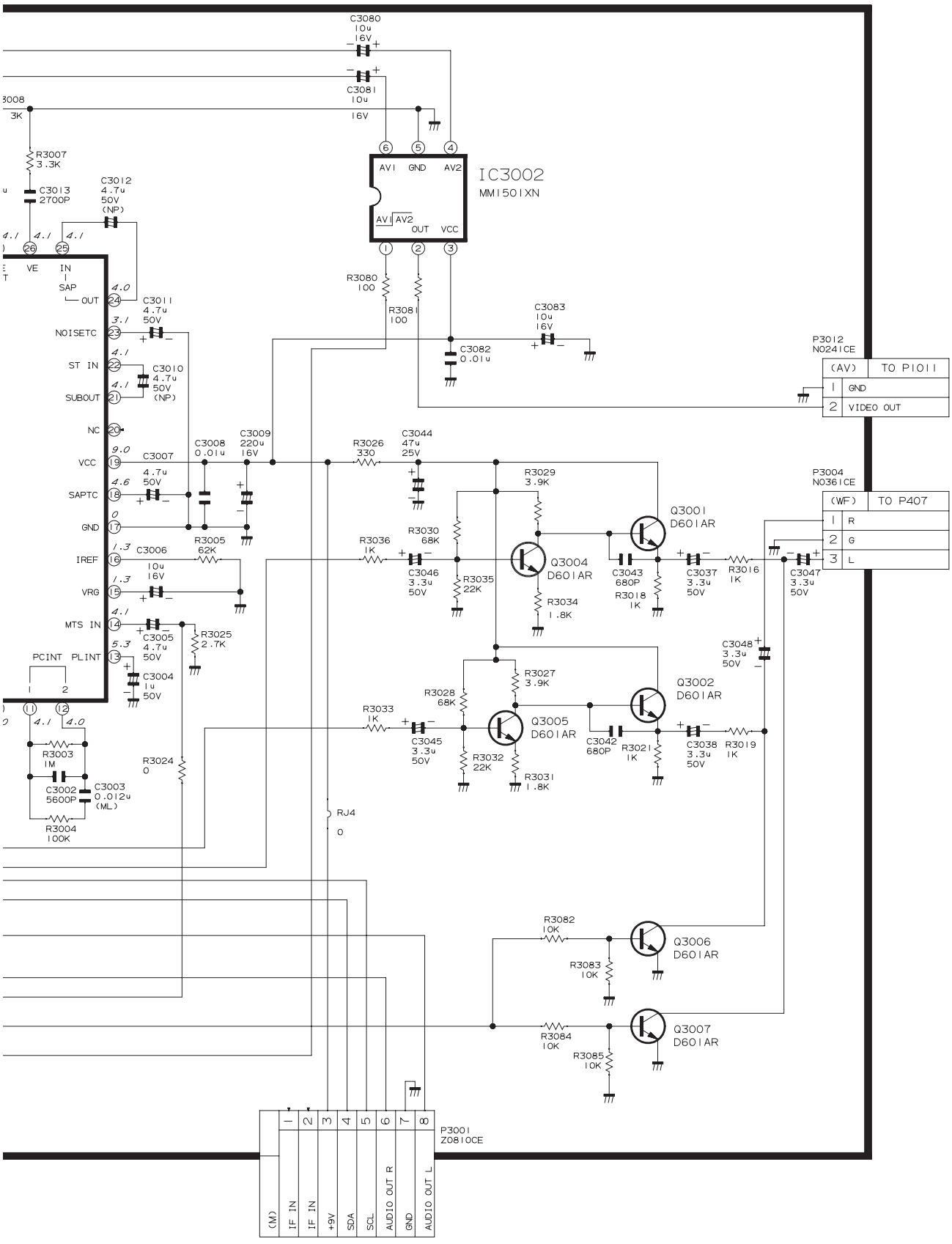
MODEL CU20F630 SCHEMATIC DIAGRAM: CRT Unit



MODEL 20F630 SCHEMATIC DIAGRAM: MTS MODULE Unit

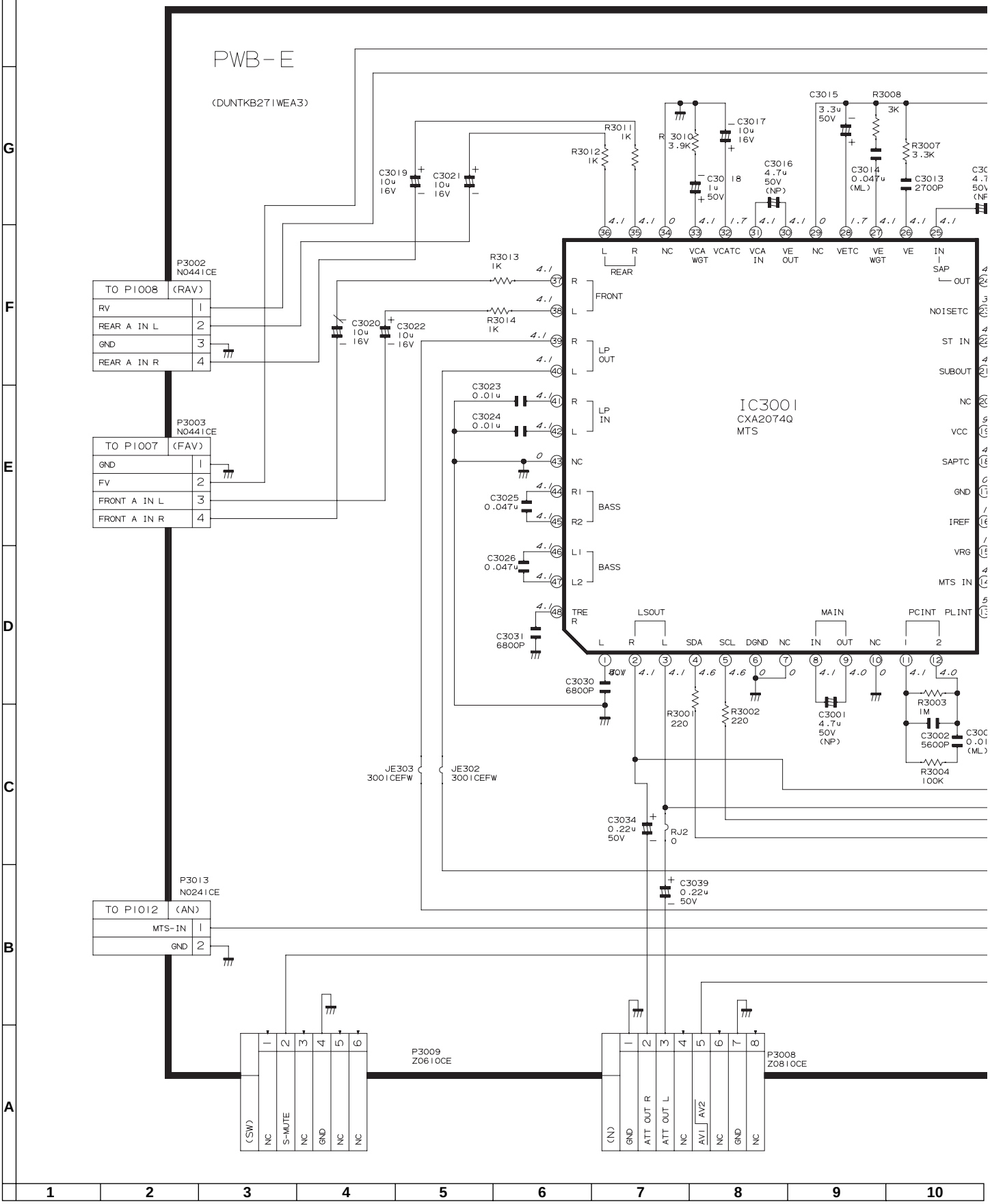


NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=MEGAOHM).
2.ALL RESISTORS ARE 1/16 WATT.UNLESS OTHERWISE NOTED.
3.UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL
(u, P, ETC).

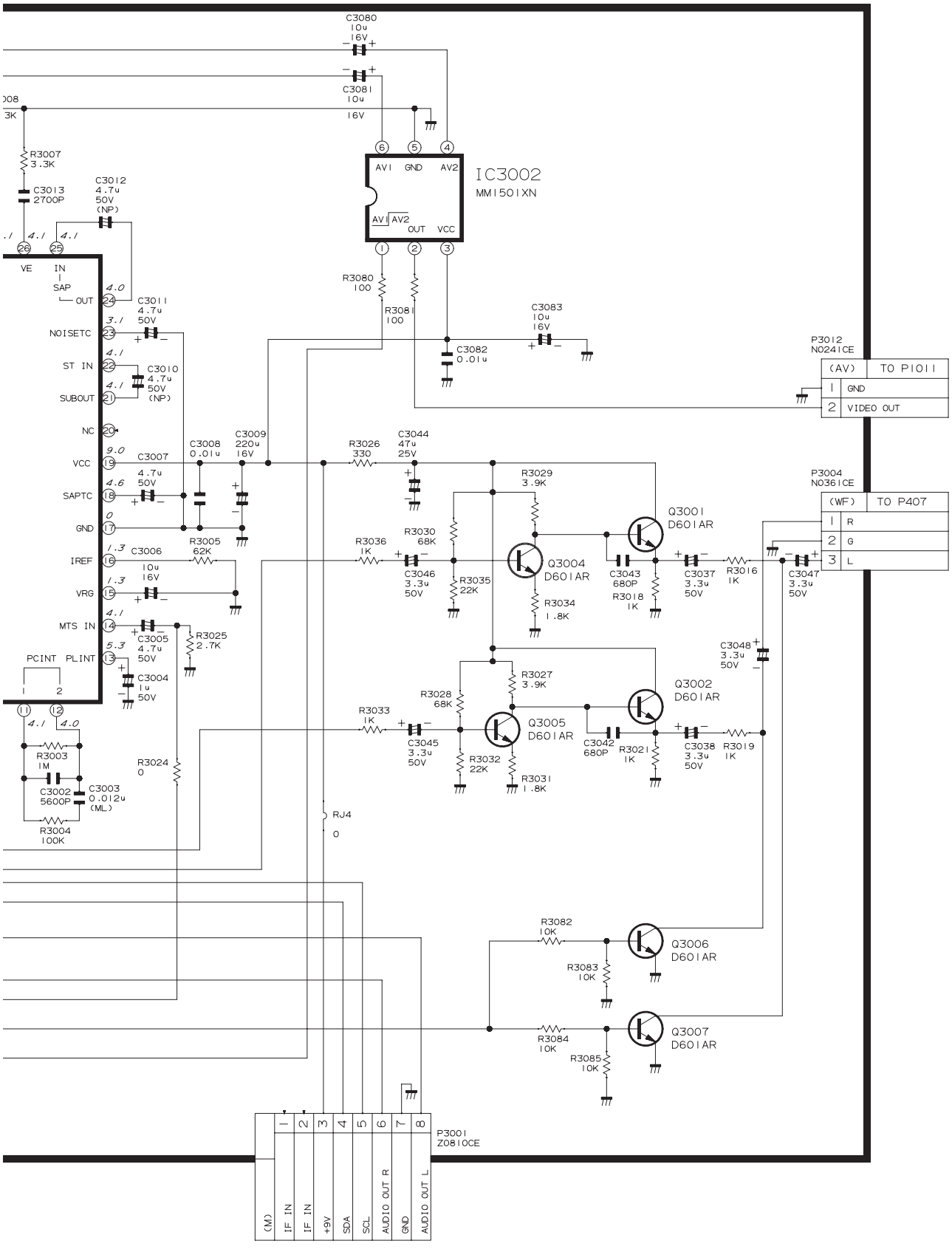


10	11	12	13	14	15	16	17	18	19

MODEL CU20F630 SCHEMATIC DIAGRAM: MTS MODULE Unit

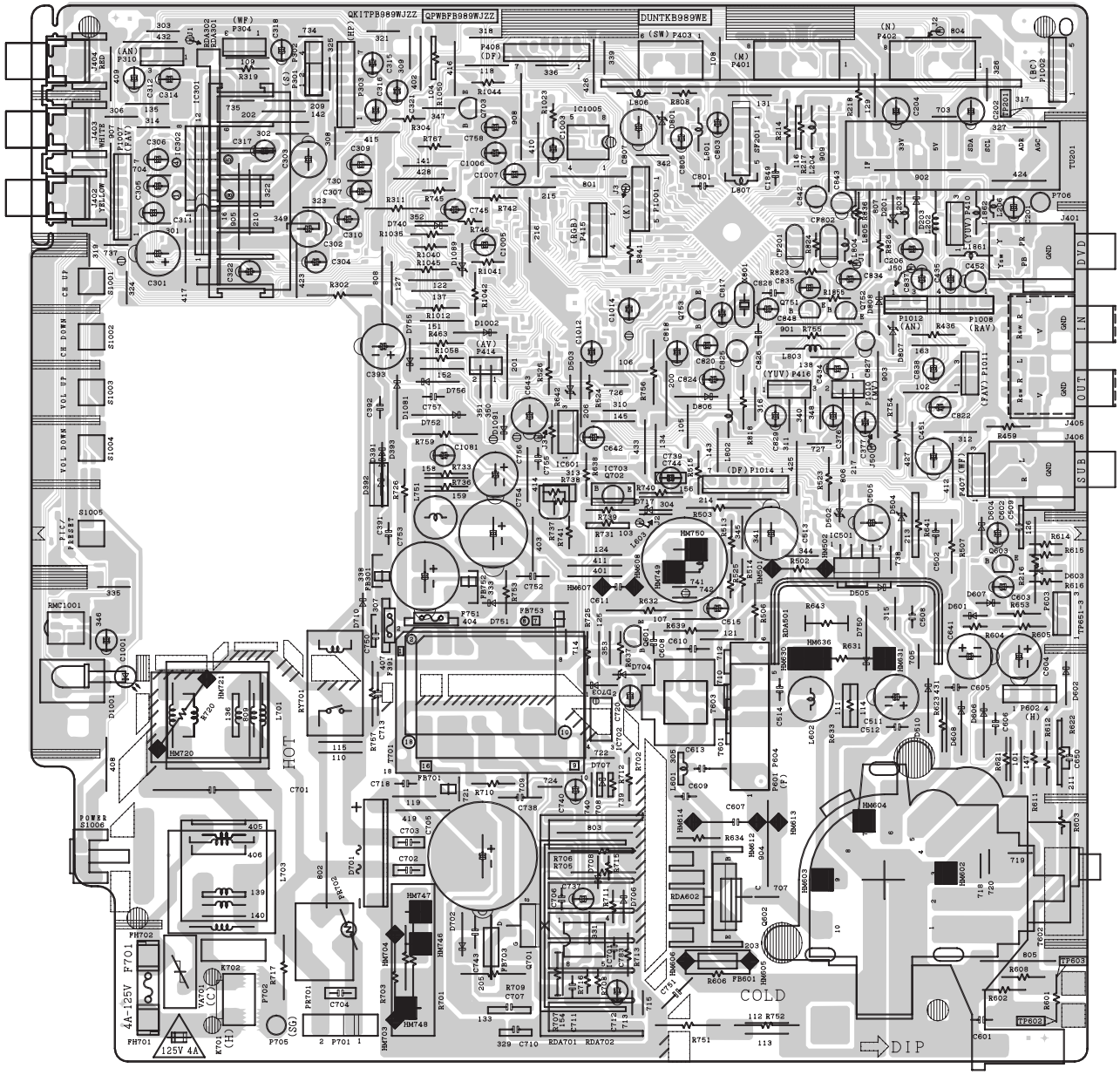


NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS, M=MEGAOHM).
2.ALL RESISTORS ARE 1/16 WATT.UNLESS OTHERWISE NOTED.
3.UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL
(u, P, ETC).

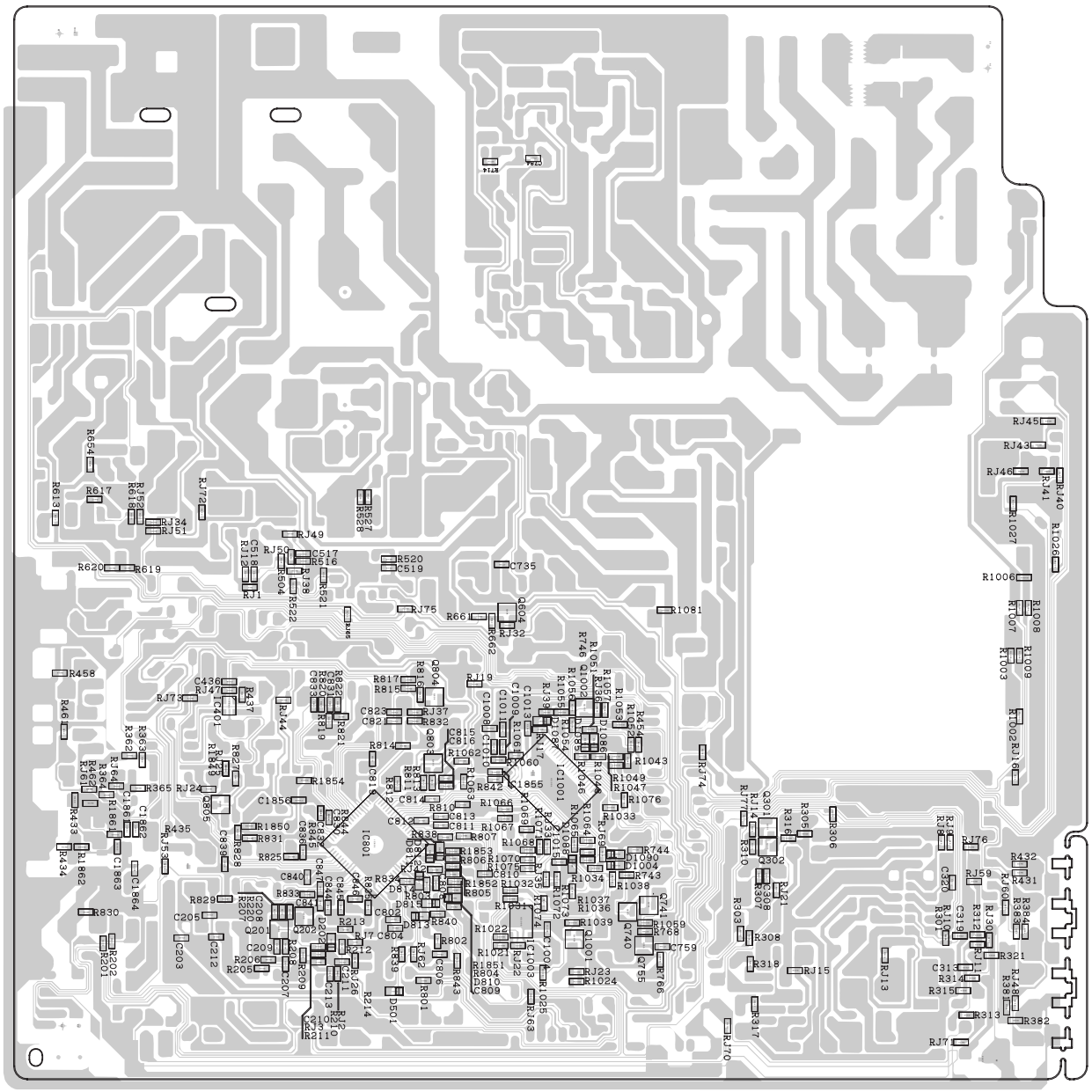


10	11	12	13	14	15	16	17	18	19

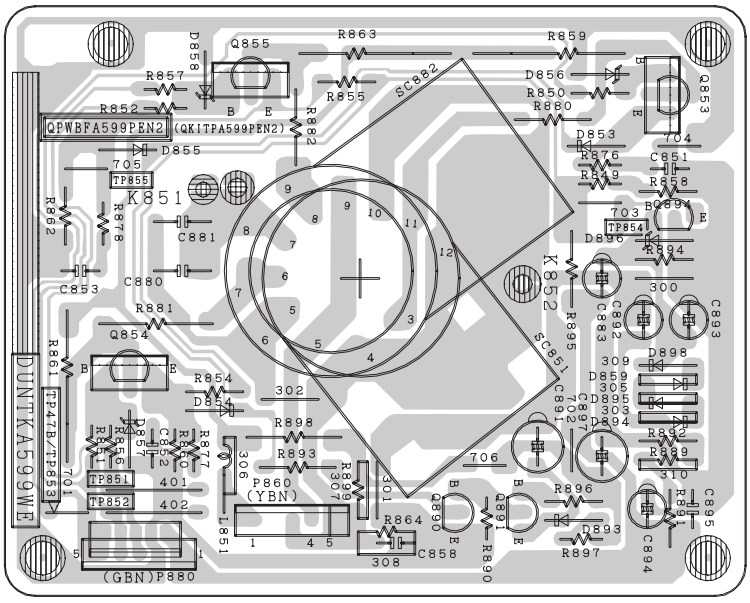
PRINTED WIRING BOARD ASSEMBLIES



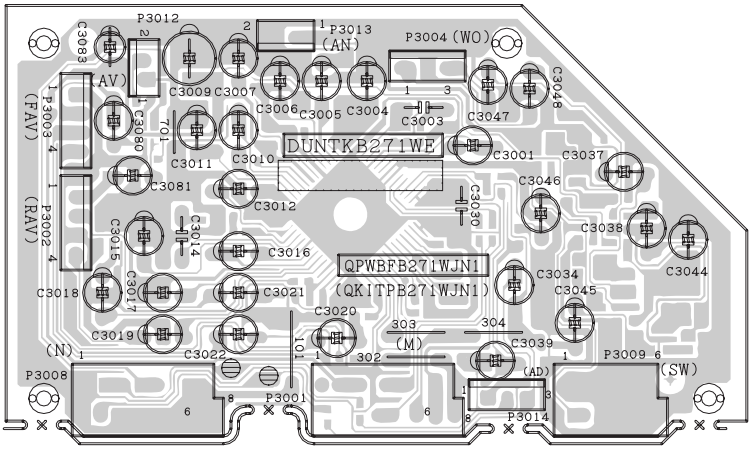
PWB-A: MAIN Unit (Wiring Side)



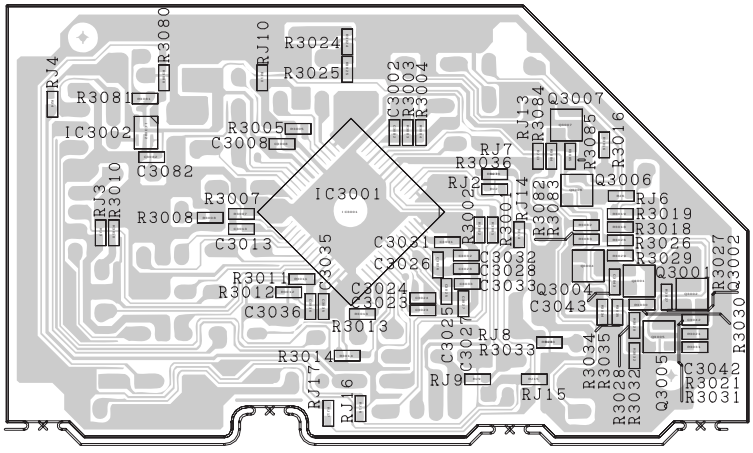
PWB-A: MAIN Unit (Chip Parts Side)



PWB-B: CRT Unit (Wiring Side)



PWB-E: MTS MODULE Unit (Wiring Side)



PWB-E: MTS MODULE Unit (Chip Parts Side)

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual ; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does no have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

in **USA**: Contact your nearest SHARP Parts Distributor to order. For location of SHARP Parts Distributor, Please call Toll-Free; 1-800-BE-SHARP

★ MARK: SPARE PARTS-DELIVERY SECTION

▲ MARK: X-RAY RELATED PARTS

Ref. No.	Part No.	★	Description	Code
PICTURE TUBE				
⚠	VB51QDX992X2E	X	Picture Tube	
⚠ L706	RCiLGA032WJZZ	X	Degaussing Coil	
	QEARCA012WJZZ	X	Ground-Part	

PRINTED WIRING BOARD ASSEMBLIES *(NOT REPLACEMENT ITEM)*

20F630

PWB-A DUNTKB989WEA0	– MAIN Unit	—
PWB-B DUNTKA599WEB4	– CRT Unit	—
PWB-E DUNTKB271FMA3	– MTS MODULE Unit	—

CU20F630

PWB-A DUNTKB989WEA1	– MAIN Unit	—
PWB-B DUNTKA599WEB5	– CRT Unit	—
PWB-E DUNTKB271WEA3	– MTS MODULE Unit	—

LISTE DES PIECES

CHANGE DES PIECES

Les pi`eces de rechange qui pr élelesentent ces caract éleristiques sp éleciales de s élecurit éle, sont identifi élees dans ce manuel : les pi`eces élelectriques qui pr élesentent ces particularit éles, sont rep éler élee par la marque ⚠ et sont hachur élees dans les listes de pi`eces et dans les diagrammes sch élematiques.
La substitution d'une pi`ece de rechange par une autre qui ne pr éLesente pas les m éoemes caract éLeristiques de s élecurit éle que la pi`ece recommand élee parl'usine et dans ce manuel de service, peut provoquer une éLelectrocution, un incendie ou toutautre sinistre.

"COMMENT COMMANDER LES PIECES DE RECHANGE"

Pour que votre commande soit rapidement et correctement remplie, veuillez fournir les renseignements suivants.

1. NUMERO DU MODELE
2. NO. DE REF
3. NO. DE PIECE
4. DESCRIPTION

in **CANADA**: Contact SHARP Electronics of Canada Limited Phone (416) 890-2100

★ MARQUE: SECTION LIVRAISON DES PIECES DERECHANGE

▲ MARQUE: PIECES RELATIVE AUX RAYONS X

Ref. No.	Part No.	★	Description	Code
DUNTKB989WEA0(20F630) DUNTKB989WEA1(CU20F630) PWB-A MAIN UNIT				
TUNER				
NOTE: THE PARTS HERES SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.				
⚠ TU201	RTUNQA003WJZZ	X	Tuner	
INTEGRATED CIRCUIT				
IC301	VHiAN7522++-1	X	AN7522	
IC401	VHiMM1501XN-1*	X	MM1501XNRE	
⚠ IC501	VHiTDA9302H-1	X	TDA9302H	
IC601	VHiKA7809AP-1	X	KIA7809API	
⚠ IC701	VHiTEA1507/-1	X	TEA1507P/N1	AE
⚠ IC703	VHiSE130N//-1	X	SE130N	AF
IC801	VHiM61251AF1EQ	X	I.C.	
IC1001	RH-iXA155WJN4	X	I.C.	
IC1003	VHiBR2416E2-1*	X	BR24C16F(20F630)	AD
IC1003	VHiCAT24W04-2*	X	I.C.(CU20F630)	
TRANSISTORS				
Q201	VS2SC2735//1E*	X	2SC2735	AB
Q302	VS2SD601AR/-1*	X	2SD601AR	AA
Q601	VS2SC2482//-1+	X	2SC2482	AB
Q602	VS2SD2539//1E	X	2SD2539	
Q603	VS2SC3198-G-1+	X	2SC3198-G	AB
Q604	VS2SD601AR/-1*	X	2SD601AR	AA
⚠ Q701	VSSTP6NC80Z1E	X	STP6NC80Z	
Q703	VS2SC3198-Y-1+	X	2SC3198-Y	
Q740	VS2SD601AR/-1*	X	2SD601AR	AA
Q741	VS2SD601AR/-1*	X	2SD601AR	AA
Q751	VS2SC2236Y/-1+	X	2SC2236Y	
Q752	VS2SC2236Y/-1+	X	2SC2236Y	
Q753	VS2SC3198-G-1+	X	2SC3198-G	AB
Q755	VS2SD601AR/-1*	X	2SD601AR	AA
Q804	VS2SB709AR/-1*	X	2SB709AR	AA
Q805	VS2SD601AR/-1*	X	2SD601AR	AA
Q1001	VS2SD601AR/-1*	X	2SD601AR	AA
DIODES				
D201	RH-EX0676GEZZ*	X	Zener Diode, 33V	AB
D203	RH-DX0048GEZZ*	X	DX0048GE	
D393	RH-DX0247CEZZ*	X	DX0247CE	
D501	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	

Ref. No.	Part No.	★	Description	Code
D502	RH-EX0652GEZZ*	X	Zener Diode, 18V	
D503	RH-EX0612GEZZ*	X	Zener Diode, 5.1V	
D504	RH-EX0654CEZZ*	X	Zener Diode	
D505	RH-DX0441CEZZ*	X	DX0441CE	AA
D510	RH-DX0131CEZZ*	X	DX0131CE	AB
D601	RH-DX0048GEZZ*	X	DX0048GE	
D602	VHD1SS244//-1*	X	1SS244	AA
D603	RH-EX0662GEZZ*	X	Zener Diode, 24V	
D606	RH-DX0131CEZZ*	X	DX0131CE	AB
D608	RH-DX0131CEZZ*	X	DX0131CE	AB
⚠ D701	RH-DX0111PEZZ	X	DX0111PE	
D703	RH-DX0048GEZZ*	X	DX0048GE	
D704	RH-EX0650GEZZ*	X	Zener Diode, 16V	
D708	RH-DX0048GEZZ*	X	DX0048GE	
D710	RH-DX0048GEZZ*	X	DX0048GE	
D750	RH-EX0647CEZZ*	X	Zener Diode, 150V	
D751	RH-DX0229CEZZ	X	DX0229CE	
D752	RH-DX0131CEZZ*	X	DX0131CE	AB
D755	RH-DX0048GEZZ*	X	DX0048GE	
D756	RH-DX0441CEZZ*	X	DX0441CE	AA
D801	RH-EX0613GEZZ*	X	Zener Diode, 5.1V	
D806	RH-DX0048GEZZ*	X	DX0048GE	
D807	RH-EX0625GEZZ*	X	Zener Diode, 8V	
D808	RH-DX0048GEZZ*	X	DX0048GE	
D810	RH-EX0263TAZZ*	X	Zener Diode, 8.1V	
D811	RH-EX0263TAZZ*	X	Zener Diode, 8.1V	
D812	RH-EX0263TAZZ*	X	Zener Diode, 8.1V	
D813	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	
D815	RH-EX0263TAZZ*	X	Zener Diode, 8.1V	
D1004	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	
D1081	RH-DX0048GEZZ*	X	DX0048GE	
D1085	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	
D1086	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	
D1087	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	
D1088	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	
D1089	RH-EX0613GEZZ*	X	Zener Diode, 5.1V	
D1090	RH-EX1393CEZZ*	X	Zener Diode, 5.1V	
D1091	RH-DX0048GEZZ*	X	DX0048GE	
⚠ IC702	RH-FXA003WJZZ	X	PC123Y82	AB
VA701	RH-VXA009WJZZ	X	VXA009WJ	AB
PACKAGED CIRCUITS				
PR702	RMPTP0092CEZZ	X	Packaged Circuit	AD
X801	RCRSAA009WJZZ	X	Crystal	
FILTERS				
CF201	RFiLC0447CEZZ	X	Filter, FiLC0447CE	
CF802	RFiLC0446CEZZ	X	Filter, FiLC0446CE	
SF201	RFiLC0405CEZZ	X	Filter, FiLC0405CE	AD
COILS				
L202	VP-CF270K0000*	X	Peaking, 27µH	
L203	VP-DF270K0000*	X	Peaking, 27µH	
L204	VP-XF1R2K0000*	X	Peaking, 1.2µH	AA
L602	RCiLP0223CEZZ	X	Coil	
L603	RCiLZA006WJZZ	X	Coil	
⚠ L701	RCiLF0078PEZZ	X	Coil	
⚠ L703	RCiLF0078PEZZ	X	Coil	
L751	RCiLP0225CEZZ	X	Coil	
L801	VP-DF100K0000*	X	Peaking, 10µH	
L802	VP-DF100K0000*	X	Peaking, 10µH	
L803	VP-DF100K0000*	X	Peaking, 10µH	
L804	VP-XF150K0000*	X	Peaking, 15µH	
L806	VP-DF100K0000*	X	Peaking, 10µH	
L807	VP-XF1R2K0000*	X	Peaking, 1.2µH	AA
L1861	VP-XF8R2K0000*	X	Peaking, 8.2µH	AA
L1862	VP-XF8R2K0000*	X	Peaking, 8.2µH	AA
TRANSFORMERS				
⚠ T601	RTRNZ0026PEZZ	X	Transformer	
▲⚠ T602	RTRNFA012WJZZ	X	H-Volt Transformer	
⚠ T701	RTRNWA036WJZZ	X	Transformer	
CAPACITORS				
C201	VCEA0A1CW476M+	X	47 16V Electrolytic	AA

Ref. No.	Part No.	★	Description	Code
C202	VCEA0A0JW477M+	X	470 6.3V Electrolytic	
C203	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C204	VCEA0A0JW477M+	X	470 6.3V Electrolytic	
C205	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C206	VCEA0A1HW106M+	X	10 50V Electrolytic	AA
C207	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C208	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C209	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C210	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C213	VCKYCY1HB102K*	X	1000p 50V Ceramic	AA
C301	VCEA0A1CW477M+	X	470 16V Electrolytic	AB
C304	VCEA0A1CW106M+	X	10 16V Electrolytic	
C307	VCEA0A1HW474M+	X	0.47 50V Electrolytic	AA
C308	VCKYCY1HF153Z*	X	0.015 50V Ceramic	
C310	VCEA0A1HW225M+	X	2.2 50V Electrolytic	AA
C311	VCEA0A1HW474M+	X	0.47 50V Electrolytic	AA
C312	VCEA0A1HW335M+	X	3.3 50V Electrolytic	
C313	VCKYCY1HF153Z*	X	0.015 50V Ceramic	
C321	VCEA0A1HW335M+	X	3.3 50V Electrolytic	
C322	VCEA0A1HW105M+	X	1 50V Electrolytic	AA
C377	VCEA0A1CW107M+	X	100 16V Electrolytic	AA
C391	VCKYPA1HB102K+	X	1000p 50V Ceramic	AA
C392	VCQYTA1HM103J+	X	0.01 50V Mylar	AA
C393	VCEA0A1EW108M+	X	1000 25V Electrolytic	AB
C434	VCEA0A1CW106M+	X	10 16V Electrolytic	
C435	VCE9GA1CW106M+	X	10 16V Electrolytic	AB
C436	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C452	VCEA9M1CW106M+	X	10 16V Electrolytic	
C505	VCEA0A1HW107M+	X	100 50V Electrolytic	
C508	VCFYAA2AA224J+	X	0.22 100V Mylar	
C509	VCKYD41CY103N*	X	0.01 16V Ceramic	
C511	VCEA0A1VW477M+	X	470 35V Electrolytic	AB
C512	VCKYPA2HB102K+	X	1000p 500V Ceramic	AB
C513	VCEA0A1VW108M+	X	1000 35V Electrolytic	AB
C514	VCFYSA1JB273J+	X	0.027 63V Mylar	
C515	VCEACA1HC335J+	X	3.3 50V Electrolytic	
C518	VCKYCY1HF103Z*	X	0.01 50V Ceramic	AA
C519	VCKYCY1HB102K*	X	1000p 50V Ceramic	AA
C601	VCQYTA1HM563J+	X	0.056 50V Mylar	
C602	VCEA0A1HW475M+	X	4.7 50V Electrolytic	AA
C603	VCEA0A1HW105M+	X	1 50V Electrolytic	AA
C604	VCEA0A2EW336M+	X	33 250V Electrolytic	AB
C605	VCKYPA2HB102K+	X	1000p 500V Ceramic	AB
C606	VCKYPA2HB102K+	X	1000p 500V Ceramic	AB
⚠ C607	VCFPVC3ZA902H	X	9000p 1800V Metallzed Polypro Film	
C608	VCKYPA2HB561K+	X	560p 500V Ceramic	AB
C610	VCFYSB2EB823J	X	0.082 250V Mylar	AB
C611	VCFPVC2DB244J	X	0.24 200V Metallzed Polypro Film	
C641	VCEA0A1EW108M+	X	1000 25V Electrolytic	AB
C642	VCEA0A1EW476M+	X	47 25V Electrolytic	AA
C643	VCEA0A1CW477M+	X	470 16V Electrolytic	AB
C650	VCKYPA2HB101K+	X	100p 500V Ceramic	
⚠ C701	RC-FZ029SCEZZ	X	0.22 AC125V Plastic	
C702	RC-KZ0029CEZZ+	X	0.01 250V Ceramic	AB
C703	RC-KZ0029CEZZ+	X	0.01 250V Ceramic	AB
C705	RC-EZA070WJZZ	X	470 200V Electrolytic	
C706	VCQYTA1HM103J+	X	0.01 50V Mylar	AA
⚠ C711	VCFYFA1HA334J+	X	0.33 50V Mylar	AB
C713	RC-KZ016SCEZZ	X	470p 250V Ceramic	
C718	VCKYPA2HB472K+	X	4700p 500V Ceramic	AB
C737	VCEA0A1EW226M+	X	22 25V Electrolytic	
C738	RC-KZ0040CEZZ	X	820p 2kV Ceramic	
C743	VCKYPH3DB561K	X	560p 2000V Ceramic	
C744	VCQYTA1HM104J+	X	0.1 50V Mylar	AB
C751	RC-KZ0106GEZZ	X	3300p AC250V Ceramic	
C752	VCKYPH3DB561K	X	560p 2000V Ceramic	
C753	RC-EZ0724CEZZ	X	100 160V Electrolytic	AC
C754	RC-EZ0638CEZZ	X	33 160V Electrolytic	
C755	VCQYTA1HM103J+	X	0.01 50V Mylar	AA
C756	VCEA0A1EW108M+	X	1000 25V Electrolytic	AB
C758	VCEA0A1HW225M+	X	2.2 50V Electrolytic	AA
C759	VCKYCY1HB102K*	X	1000p 50V Ceramic	AA
C784	VCKYCY1HB103K*	X	0.01 50V Ceramic	AA
C801	VCFYFA1HA105J+	X	1 50V Mylar	

Ref. No.	Part No.	★			Description	Code
C802	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C803	VCEA0A1AW476M+	X	47	10V	Electrolytic	
C804	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C805	VCEA0A1HW105M+	X	1	50V	Electrolytic	AA
C806	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C807	VCEA0A1CW337M+	X	330	16V	Electrolytic	
C808	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C809	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C810	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C811	VCKYCY1EF104Z*	X	0.1	25V	Ceramic	
C812	VCKYCY1EF104Z*	X	0.1	25V	Ceramic	
C813	VCKYCY1EF104Z*	X	0.1	25V	Ceramic	
C814	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C815	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C816	VCKYCY1EF104Z*	X	0.1	25V	Ceramic	
C817	VCEA0A1AW107M+	X	100	10V	Electrolytic	AA
C818	VCEA0A1HW475M+	X	4.7	50V	Electrolytic	AA
C819	VCCCCY1HH121J*	X	120p	50V	Ceramic	
C820	VCEA0A1HW474M+	X	0.47	50V	Electrolytic	AA
C821	VCKYCY1HF153Z*	X	0.015	50V	Ceramic	
C822	VCE9GA1HW105M+	X	1	50V	Electrolytic	AB
C823	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C824	VCEA0A1CW337M+	X	330	16V	Electrolytic	
C825	VCE9EM1HW105M+	X	1	50V	Electrolytic	
C826	VCKYPA1HF103Z+	X	0.01	50V	Ceramic	AA
C827	VCEA9M1CW476M+	X	47	16V	Electrolytic	
C828	VCKYPA1HB103K+	X	0.01	50V	Ceramic	
C829	VCEA0A1CW476M+	X	47	16V	Electrolytic	AA
C831	VCKYCY1EF104Z*	X	0.1	25V	Ceramic	
C833	VCKYCY1EF104Z*	X	0.1	25V	Ceramic	
C834	VCEA0A1CW107M+	X	100	16V	Electrolytic	AA
C835	VCEA0A1CW106M+	X	10	16V	Electrolytic	
C836	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C837	VCEA0A1HW105M+	X	1	50V	Electrolytic	AA
C839	VCCCCY1HH680J*	X	68p	50V	Ceramic	AA
C840	VCKYCY1EF104Z*	X	0.1	25V	Ceramic	
C841	VCCCCY1HH101J*	X	100p	50V	Ceramic	AA
C842	VCEA9M1HW474M+	X	0.47	50V	Electrolytic	
C843	VCEA9M1HW105M+	X	1	50V	Electrolytic	
C845	VCKYCY1CF224Z*	X	0.22	16V	Ceramic	
C846	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C847	VCCCCY1HH220J*	X	22p	50V	Ceramic	
C848	VCEA0A1HW105M+	X	1	50V	Electrolytic	AA
C1001	VCEA0A0JW107M+	X	100	6.3V	Electrolytic	
C1003	VCEA0A1CW106M+	X	10	16V	Electrolytic	
C1004	VCKYCY1CF474Z*	X	0.47	16V	Ceramic	
C1006	VCEA0A1HW225M+	X	2.2	50V	Electrolytic	AA
C1007	VCEA0A1CW107M+	X	100	16V	Electrolytic	AA
C1008	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C1009	VCKYCY1HF103Z*	X	0.01	50V	Ceramic	AA
C1011	VCKYCY1HB221K*	X	220p	50V	Ceramic	
C1012	VCEA0A1HW105M+	X	1	50V	Electrolytic	AA
C1013	VCKYCY1HB102K*	X	1000p	50V	Ceramic	AA
C1014	VCEA0A1HW475M+	X	4.7	50V	Electrolytic	AA
C1015	VCCCCY1HH101J*	X	100p	50V	Ceramic	AA
C1081	VCEA0A1HW104M+	X	0.1	50V	Electrolytic	
C1849	VCFYFA1HA223J+	X	0.022	50V	Mylar	
C1855	VCKYCY1HB561K*	X	560p	50V	Ceramic	
C1856	VCKYCY1HB102K*	X	1000p	50V	Ceramic	AA
C1861	VCCCCY1HH221J*	X	220p	50V	Ceramic	
C1862	VCKYCY1HB102K*	X	1000p	50V	Ceramic	AA
C1863	VCCCCY1HH221J*	X	220p	50V	Ceramic	
C1864	VCKYCY1HB102K*	X	1000p	50V	Ceramic	AA

RESISTORS

Ref. No.	Part No.	★			Description	Code
RJ1	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ3	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ7	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ9	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ10	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ11	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ13	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ14	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ15	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ16	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ17	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ19	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ22	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ23	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ33	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ35	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ37	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ39	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ41	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ42	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ43	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ47	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ50	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ51	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ52	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ53	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ60	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ62	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ63	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ65	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ69	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ70	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ71	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ72	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ75	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ76	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
C211	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
R201	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R202	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R205	VRS-CY1JF680J*	X	68	1/16W	Metal Oxide	AA
R206	VRS-CY1JF122J*	X	1.2k	1/16W	Metal Oxide	AA
R207	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R208	VRS-CY1JF331J*	X	330	1/16W	Metal Oxide	AA
R209	VRS-CY1JF392J*	X	3.9k	1/16W	Metal Oxide	AA
R216	VRS-VV3LB333J	X	33k	3W	Metal Oxide	
R220	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R301	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R302	VRN-VV3DB1R2J	X	1.2	2W	Metal Film	
R303	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R304	VRD-RA2BE683J*	X	68k	1/8W	Carbon	AA
R305	VRS-CY1JF274J*	X	270k	1/16W	Metal Oxide	
R307	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R308	VRS-CY1JF392J*	X	3.9k	1/16W	Metal Oxide	AA
R310	VRS-CY1JF473J*	X	47k	1/16W	Metal Oxide	AA
R311	VRD-RA2BE272J*	X	2.7k	1/8W	Carbon	AA
R314	VRS-CY1JF392J*	X	3.9k	1/16W	Metal Oxide	AA
R315	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R362	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R363	VRS-CY1JF564J*	X	560k	1/16W	Metal Oxide	AA
R364	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R365	VRS-CY1JF564J*	X	560k	1/16W	Metal Oxide	AA
R381	VRS-CY1JF564J*	X	560k	1/16W	Metal Oxide	AA
R382	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R383	VRS-CY1JF564J*	X	560k	1/16W	Metal Oxide	AA
R384	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R431	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R432	VRS-CY1JF750J*	X	75	1/16W	Metal Oxide	AA
R433	VRS-CY1JF750J*	X	75	1/16W	Metal Oxide	AA
R434	VRS-CY1JF750J*	X	75	1/16W	Metal Oxide	AA
R435	VRS-CY1JF750J*	X	75	1/16W	Metal Oxide	AA
R437	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R461	VRS-CY1JF750J*	X	75	1/16W	Metal Oxide	AA
R462	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R502	VRS-RG3AB102J+	X	1k	1W	Metal Oxide	
R503	VRN-RL3DB1R2J+	X	1.2	2W	Metal Film	AB
R504	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R506	VRS-RG3AB331J+	X	330	1W	Metal Oxide	
R507	VRD-RM2HD1R0J*	X	1	1/2W	Carbon	AA
R513	VRD-RM2HD333J*	X	33k	1/2W	Carbon	
R514	VRD-RM2HD682J*	X	6.8k	1/2W	Carbon	
R520	VRS-CY1JF123J*	X	12k	1/16W	Metal Oxide	AA
R522	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R523	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R524	VRD-RA2BE103J*	X	10k	1/8W	Carbon	AA
R525	VRD-RA2BE122J*	X	1.2k	1/8W	Carbon	AA
R526	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R528	VRS-CY1JF683J*	X	68k	1/16W	Metal Oxide	AA

Ref. No.	Part No.	★			Description	Code
R602	VRD-RA2BE393J*	X	39k	1/8W	Carbon	
R603	VRD-RA2BE273J*	X	27k	1/8W	Carbon	
R604	VRD-RA2BE473J*	X	47k	1/8W	Carbon	AA
R605	VRD-RM2HD104J*	X	100k	1/2W	Carbon	AA
R606	VRN-RL3LBR27J+	X	0.27	3W	Metal Film	
⚠ R608	VRD-RM2HD102J*	X	1k	1/2W	Carbon	
⚠ R611	VRN-RL3ABR27J+	X	0.27	1W	Metal Film	AB
⚠ R612	VRD-RM2HD270J*	X	27	1/2W	Carbon	AA
R613	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
R614	VRD-RA2BE154J*	X	150k	1/8W	Carbon	
R615	VRD-RA2BE102J*	X	1k	1/8W	Carbon	AA
R616	VRD-RA2BE102J*	X	1k	1/8W	Carbon	AA
R617	VRS-CY1JF123J*	X	12k	1/16W	Metal Oxide	AA
R618	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
⚠ R621	VRN-RL2HC4R7J+	X	4.7	1/2W	Metal Film	
R622	VRS-VV3DB682J	X	6.8k	2W	Metal Oxide	
R631	VRS-KT3LB391J	X	390	3W	Metal Oxide	
R632	VRS-RG3LB122J+	X	1.2k	3W	Metal Oxide	
⚠ R633	VRS-KA3NG3R3K	X	3.3	7W	Metal Oxide	AB
R637	VRD-RA2BE331J*	X	330	1/8W	Carbon	AA
R638	VRD-RA2BE331J*	X	330	1/8W	Carbon	AA
R639	VRD-RM2HD562J*	X	5.6k	1/2W	Carbon	AA
R642	VRD-RM2HD470J*	X	47	1/2W	Carbon	AA
R643	VRS-KA3HG912J	X	9.1k	5W	Metal Oxide	
R661	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R662	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R701	VRW-KQ3NC1R5K	X	1.5	7W	Cement	
R702	VRD-RM2HD100J*	X	10	1/2W	Carbon	AA
R705	VRN-VV3DBR33J	X	0.33	2W	Metal Film	
R706	VRN-VV3DBR33J	X	0.33	2W	Metal Film	
R707	VRD-RM2HD270J*	X	27	1/2W	Carbon	AA
R708	VRD-RA2BE102J*	X	1k	1/8W	Carbon	AA
R710	VRS-RG2HC103J+	X	10k	1/2W	Metal Oxide	AB
R711	VRD-RA2BE394J*	X	390k	1/8W	Carbon	
R713	VRD-RM2HD122J*	X	1.2k	1/2W	Carbon	
R715	VRD-RA2BE150J*	X	15	1/8W	Carbon	
R716	VRD-RA2BE223J*	X	22k	1/8W	Carbon	AA
R717	RR-DZ0049CEZZ*	X	3.9M	1/2W		AB
R725	VRD-RM2HD821J*	X	820	1/2W	Carbon	AA
R726	VRN-RL2HCR47J+	X	0.47	1/2W	Metal Film	
R742	VRD-RA2BE183J*	X	18k	1/8W	Carbon	AA
R743	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R744	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R745	VRD-RA2BE472J*	X	4.7k	1/8W	Carbon	AA
R746	VRD-RA2BE223J*	X	22k	1/8W	Carbon	AA
R753	VRD-RM2HD124J*	X	120k	1/2W	Carbon	AA
R754	VRN-RL3DB8R2J+	X	8.2	2W	Metal Film	
R755	VRS-RG3DB150J+	X	15	2W	Metal Oxide	
R756	VRS-RG3DB121J+	X	120	2W	Metal Oxide	
R759	VRS-RG3DB101J+	X	100	2W	Metal Oxide	
R766	VRS-CY1JF333J*	X	33k	1/16W	Metal Oxide	AA
R767	VRD-RA2BE103J*	X	10k	1/8W	Carbon	AA
R768	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R802	VRS-CY1JF682J*	X	6.8k	1/16W	Metal Oxide	AA
R803	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R804	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R805	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R806	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R807	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R808	VRD-RA2BE273J*	X	27k	1/8W	Carbon	
R810	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R812	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R814	VRS-CY1JF473J*	X	47k	1/16W	Metal Oxide	AA
R815	VRS-CY1JF473J*	X	47k	1/16W	Metal Oxide	AA
R816	VRS-CY1JF223J*	X	22k	1/16W	Metal Oxide	AA
R817	VRS-CY1JF473J*	X	47k	1/16W	Metal Oxide	AA
R818	VRS-RG3AB151J+	X	150	1W	Metal Oxide	
R823	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R824	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R826	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R827	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R828	VRS-CY1JF471J*	X	470	1/16W	Metal Oxide	AA
R829	VRS-CY1JF472J*	X	4.7k	1/16W	Metal Oxide	AA
R830	VRS-CY1JF393J*	X	39k	1/16W	Metal Oxide	AA
R831	VRS-CY1JF271J*	X	270	1/16W	Metal Oxide	
R832	VRS-CY1JF822J*	X	8.2k	1/16W	Metal Oxide	AA

Ref. No.	Part No.	★			Description	Code
R833	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R835	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R836	VRD-RA2BE470J*	X	47	1/8W	Carbon	AA
R838	VRS-CY1JF105J*	X	1M	1/16W	Metal Oxide	AA
R839	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R840	VRS-CY1JF124J*	X	120k	1/16W	Metal Oxide	
R841	VRD-RA2BE821J*	X	820	1/8W	Carbon	
R842	VRS-CY1JF471J*	X	470	1/16W	Metal Oxide	AA
R843	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R844	VRS-CY1JF185J*	X	1.8M	1/16W	Metal Oxide	
R845	VRS-CY1JF185J*	X	1.8M	1/16W	Metal Oxide	
R1002	VRS-CY1JF183J*	X	18k	1/16W	Metal Oxide	AA
R1003	VRS-CY1JF822J*	X	8.2k	1/16W	Metal Oxide	AA
R1006	VRS-CY1JF822J*	X	8.2k	1/16W	Metal Oxide	AA
R1007	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1008	VRS-CY1JF183J*	X	18k	1/16W	Metal Oxide	AA
R1009	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1021	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1022	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1023	VRD-RA2BE271J*	X	270	1/8W	Carbon	AA
R1024	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1026	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
R1027	VRS-CY1JF104J*	X	100k	1/16W	Metal Oxide	AA
R1031	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1032	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1034	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1035	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R1036	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1037	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1038	VRS-CY1JF562J*	X	5.6k	1/16W	Metal Oxide	AA
R1039	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R1040	VRD-RA2BE273J*	X	27k	1/8W	Carbon	
R1041	VRD-RA2BE103J*	X	10k	1/8W	Carbon	AA
R1042	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R1043	VRS-CY1JF104J*	X	100k	1/16W	Metal Oxide	AA
R1045	VRD-RA2BE101J*	X	100	1/8W	Carbon	AA
R1046	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1047	VRS-CY1JF183J*	X	18k	1/16W	Metal Oxide	AA
R1048	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1049	VRS-CY1JF183J*	X	18k	1/16W	Metal Oxide	AA
R1051	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1052	VRS-CY1JF104J*	X	100k	1/16W	Metal Oxide	AA
R1053	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1054	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1059	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1061	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R1062	VRS-CY1JF105J*	X	1M	1/16W	Metal Oxide	AA
R1063	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1064	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1065	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1066	VRS-CY1JF561J*	X	560	1/16W	Metal Oxide	
R1067	VRS-CY1JF152J*	X	1.5k	1/16W	Metal Oxide	AA
R1068	VRS-CY1JF331J*	X	330	1/16W	Metal Oxide	AA
R1069	VRS-CY1JF152J*	X	1.5k	1/16W	Metal Oxide	AA
R1070	VRS-CY1JF331J*	X	330	1/16W	Metal Oxide	AA
R1071	VRS-CY1JF152J*	X	1.5k	1/16W	Metal Oxide	AA
R1072	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R1073	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R1074	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1075	VRS-CY1JF331J*	X	330	1/16W	Metal Oxide	AA
R1076	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R1081	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1849	VRS-CY1JF222J*	X	2.2k	1/16W	Metal Oxide	AA
R1850	VRS-CY1JF472J*	X	4.7k	1/16W	Metal Oxide	AA
R1851	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R1852	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R1853	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R1854	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R1855	VRD-RA2BE102J*	X	1k	1/8W	Carbon	AA
R1861	VRS-CY1JF121J*	X	120	1/16W	Metal Oxide	
R1862	VRS-CY1JF121J*	X	120	1/16W	Metal Oxide	

SWITCHES

S1001	QSW-K0202PEZZ+	X	Switch, CH-UP
S1002	QSW-K0202PEZZ+	X	Switch, CH-DOWN
S1003	QSW-K0202PEZZ+	X	Switch, VOL.-UP

Ref. No.	Part No.	★	Description	Code
S1004	QSW-K0202PEZZ+	X	Switch, VOL.-DOWN	
S1005	QSW-K0202PEZZ+	X	Switch, MENU	
S1006	QSW-K0114CEZZ	X	Switch, POWER	

BALUN

FB701	RBLN-0020CEZZ+	X	Balun, BLN-0020CE	AB

MISCELLANEOUS PARTS

⚠ ACC701	QACCDA015WJPZ	X	AC Cord	
⚠ F701	QFS-B4023CEZZ	X	Fuse, 4A/125V	AB
FH701	QFSHD1013CEZZ+	X	Fuse Holder	AA
FH702	QFSHD1014CEZZ+	X	Fuse Holder	AA
J401	QJAKGA015WJZZ	X	Jack, 9Pin	
J402	QJAKE0108CEZZ	X	Jack, 3Pin	
J403	QJAKE0183CEZZ	X	Jack, 3Pin	
J404	QJAKE0184CEZZ	X	Jack, 3Pin	
J405	QJAKG0093CEZZ	X	Rear AV In Jack	
J406	QJAKFA008WJZZ	X	Jack	
P310	QCNW-A482WJZZ	X	Connecting Cord, 7Pin(DF)	
P302	QPLGN0461CEZZA	X	Plug, 4pin(S)	AB
P407	QPLGN0361CEZZA	X	Plug, 3Pin(WF)	AB
P601	QPLGN0660CEZZ	X	Plug, 6Pin(K1-6)	
P602	QPLGN0461CEZZA	X	Plug, 4Pin(H)	AB
P603	QPLGN0361CEZZA	X	Plug, 3Pin(TP651-3)	AB
P701	QPLGN0260CEZZ	X	Plug, 2Pin(M1-2)	AB
P705	QTiPM0083CEZZ	X	Tip	
P1001	QPLGN0561CEZZA	X	Plug, 5Pin(K)	AB
P1002	QPLGN0561CEZZA	X	Plug, 5Pin(BC)	AB
P1007	QPLGN0461CEZZA	X	Plug, 4Pin(FAV)	AB
P1008	QPLGN0461CEZZA	X	Plug, 4Pin(RAV)	AB
P1011	QPLGN0361CEZZA	X	Plug, 3Pin(FAV)	AB
P1012	QPLGN0361CEZZA	X	Plug, 3Pin(AN)	AB
P1014	QCNW-A482WJZZ	X	Connecting Cord, 7Pin(DF)	
RMC1001	RRMCU0222CEZZ	X	Remote Receiver	AD
⚠ RY701	RRLYJ0093CEZZ	X	Relay	
RDA501	PRDARA010WJFW	X	Heat Sink for IC501	
RDA602	PRDAR0224PEFW	X	Heat Sink for Q602	
RDA701	PRDARA026WJFW	X	Heat Sink for Q701	
	QCNW-A529WJZZ	X	Connecting Cord	
	QCNW-A625WJZZ	X	Connecting Cord	

DUNTKA599WEB4(20F630)
DUNTKA599WEB5(CU20F630)
PWB-B CRT UNIT

TRANSISTORS

Q853	VS2SC3789//2E	X	2SC3789	
Q854	VS2SC3789//2E	X	2SC3789	
Q855	VS2SC3789//2E	X	2SC3789	
Q894	VS2SA1015Y/1E+	X	2SA1015Y	

DIODES

D859	VHD1SS119//-1∗	X	1SS119	AA
D898	VHD1SS119//-1∗	X	1SS119	AA

COIL

L851	VP-MK820K0000+	X	Peaking, 82μH	

CAPACITORS

C851	VCKYPA1HB221K+	X	220p	50V	Ceramic	
C852	VCKYPA1HB221K+	X	220p	50V	Ceramic	
C853	VCKYPA1HB221K+	X	220p	50V	Ceramic	
C880	RC-KZ0153CEZZ	X	1000p	3kV	Ceramic	
C893	VCEA0A1CW336M+X		33	16V	Electrolytic	

RESISTORS

R849	VRD-RA2BE271J∗	X	270	1/8W	Carbon	AA
R850	VRD-RA2BE470J∗	X	47	1/8W	Carbon	AA
R851	VRD-RA2BE470J∗	X	47	1/8W	Carbon	AA
R852	VRD-RA2BE470J∗	X	47	1/8W	Carbon	AA
R854	VRD-RA2BE331J∗	X	330	1/8W	Carbon	AA
R855	VRD-RA2BE331J∗	X	330	1/8W	Carbon	AA
⚠ R859	VRS-VV3DB123J	X	12k	2W	Metal Oxide	
⚠ R861	VRS-VV3DB123J	X	12k	2W	Metal Oxide	
⚠ R863	VRS-VV3DB123J	X	12k	2W	Metal Oxide	
R864	VRD-RA2BE470J∗	X	47	1/8W	Carbon	AA
R876	VRD-RA2BE121J∗	X	120	1/8W	Carbon	AA
R877	VRD-RA2BE121J∗	X	120	1/8W	Carbon	AA
R878	VRD-RA2BE121J∗	X	120	1/8W	Carbon	AA
R880	VRD-RM2HD332J∗	X	3.3k	1/2W	Carbon	
R881	VRD-RM2HD332J∗	X	3.3k	1/2W	Carbon	
R882	VRD-RM2HD332J∗	X	3.3k	1/2W	Carbon	
R889	VRD-RA2BE821J∗	X	820	1/8W	Carbon	
R891	VRD-RA2BE561J∗	X	560	1/8W	Carbon	AA
R892	VRD-RA2BE391J∗	X	390	1/8W	Carbon	
R894	VRD-RA2BE152J∗	X	1.5k	1/8W	Carbon	AA
R895	VRD-RA2BE561J∗	X	560	1/8W	Carbon	AA

MISCELLANEOUS PARTS

P860	QPLGN0461CEZZ	X	Plug, 4Pin(H)	
P880	QPLGN0561CEZZ	X	Plug, 5Pin(K)	
SC851	QSOCV0933CEZZ	X	Socket, 12Pin	

DUNTKB271FMA3(20F630)
DUNTKB271WEA3(CU20F630)
PWB-E MTS MODULE UNIT

INTEGRATED CIRCUITS

IC3001	VHiCXA2074Q-1S	X	CXA2074Q	
IC3002	VHiMM1501XN-1∗	X	MM1501XNRE	

TRANSISTORS

Q3001	VS2SD601AR/-1∗	X	2SD601AR	AA
Q3002	VS2SD601AR/-1∗	X	2SD601AR	AA
Q3004	VS2SD601AR/-1∗	X	2SD601AR	AA
Q3005	VS2SD601AR/-1∗	X	2SD601AR	AA
Q3006	VS2SD601AR/-1∗	X	2SD601AR	AA
Q3007	VS2SD601AR/-1∗	X	2SD601AR	AA

CAPACITORS

C3001	VCE9GA1HW475M+X		4.7	50V	Electrolytic	AB
C3002	VCKYCY1HB562K∗	X	5600p	50V	Ceramic	AA
C3003	VCQYTA1HM123J+	X	0.012	50V	Mylar	
C3004	VCEA0A1HW105M+X		1	50V	Electrolytic	AA
C3005	VCEA0A1HW475M+X		4.7	50V	Electrolytic	AA
C3006	VCEA0A1CW106M+X		10	16V	Electrolytic	
C3007	VCEA0A1HW475M+X		4.7	50V	Electrolytic	AA
C3008	VCKYCY1HF103Z∗	X	0.01	50V	Ceramic	AA
C3009	VCEA0A1CW227M+X		220	16V	Electrolytic	AB
C3010	VCE9GA1HW475M+X		4.7	50V	Electrolytic	AB
C3011	VCEA0A1HW475M+X		4.7	50V	Electrolytic	AA
C3012	VCE9GA1HW475M+X		4.7	50V	Electrolytic	AB
C3013	VCKYCY1HB272K∗	X	2700p	50V	Ceramic	AA
C3014	VCQYTA1HM473J+	X	0.047	50V	Mylar	AA
C3015	VCEACA1HC335K+	X	3.3	50V	Electrolytic	AB
C3016	VCE9GA1HW475M+X		4.7	50V	Electrolytic	AB
C3017	VCEACA1CC106K+	X	10	16V	Electrolytic	AB
C3018	VCEA0A1HW105M+X		1	50V	Electrolytic	AA
C3019	VCEA0A1CW106M+X		10	16V	Electrolytic	
C3020	VCEA0A1CW106M+X		10	16V	Electrolytic	
C3021	VCEA0A1CW106M+X		10	16V	Electrolytic	
C3022	VCEA0A1CW106M+X		10	16V	Electrolytic	
C3023	VCKYCY1HF103Z∗	X	0.01	50V	Ceramic	AA
C3024	VCKYCY1HF103Z∗	X	0.01	50V	Ceramic	AA
C3025	VCKYCY1HF473Z∗	X	0.047	50V	Ceramic	
C3026	VCKYCY1HF473Z∗	X	0.047	50V	Ceramic	
C3030	VCQYTA1HM682J+	X	6800p	50V	Mylar	AA
C3031	VCKYCY1HF682Z∗	X	6800p	50V	Ceramic	
C3034	VCEA0A1HW224M+X		0.22	50V	Electrolytic	AA
C3037	VCEA0A1HW335M+X		3.3	50V	Electrolytic	
C3038	VCEA0A1HW335M+X		3.3	50V	Electrolytic	
C3039	VCEA0A1HW224M+X		0.22	50V	Electrolytic	AA
C3042	VCKYCY1HB681K∗	X	680p	50V	Ceramic	AA
C3043	VCKYCY1HB681K∗	X	680p	50V	Ceramic	AA

Ref. No.	Part No.	★		Description	Code
C3044	VCEA0A1EW476M+	X	47 25V	Electrolytic	AA
C3045	VCEA0A1HW335M+	X	3.3 50V	Electrolytic	
C3046	VCEA0A1HW335M+	X	3.3 50V	Electrolytic	
C3047	VCEA0A1HW335M+	X	3.3 50V	Electrolytic	
C3048	VCEA0A1HW335M+	X	3.3 50V	Electrolytic	
C3080	VCEA0A1CW106M+	X	10 16V	Electrolytic	
C3081	VCEA0A1CW106M+	X	10 16V	Electrolytic	
C3082	VCKYCY1HF103Z*	X	0.01 50V	Ceramic	AA
C3083	VCEAKA1CW106M+	X	10 16V	Electrolytic	

RESISTORS

RJ2	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
RJ4	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
R3001	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R3002	VRS-CY1JF221J*	X	220	1/16W	Metal Oxide	AA
R3003	VRS-CY1JF105J*	X	1M	1/16W	Metal Oxide	AA
R3004	VRS-CY1JF104J*	X	100k	1/16W	Metal Oxide	AA
R3005	VRS-CY1JF623J*	X	62k	1/16W	Metal Oxide	AA
R3007	VRS-CY1JF332J*	X	3.3k	1/16W	Metal Oxide	AA
R3008	VRS-CY1JF302J*	X	3k	1/16W	Metal Oxide	AA
R3010	VRS-CY1JF392J*	X	3.9k	1/16W	Metal Oxide	AA
R3011	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3012	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3013	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3014	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3016	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3018	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3019	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3021	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3024	VRS-CY1JF000J*	X	0	1/16W	Metal Oxide	AA
R3025	VRS-CY1JF272J*	X	2.7k	1/16W	Metal Oxide	AA
R3026	VRS-CY1JF331J*	X	330	1/16W	Metal Oxide	AA
R3027	VRS-CY1JF392J*	X	3.9k	1/16W	Metal Oxide	AA
R3028	VRS-CY1JF683J*	X	68k	1/16W	Metal Oxide	AA
R3029	VRS-CY1JF392J*	X	3.9k	1/16W	Metal Oxide	AA
R3030	VRS-CY1JF683J*	X	68k	1/16W	Metal Oxide	AA
R3031	VRS-CY1JF182J*	X	1.8k	1/16W	Metal Oxide	AA
R3032	VRS-CY1JF223J*	X	22k	1/16W	Metal Oxide	AA
R3033	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3034	VRS-CY1JF182J*	X	1.8k	1/16W	Metal Oxide	AA
R3035	VRS-CY1JF223J*	X	22k	1/16W	Metal Oxide	AA
R3036	VRS-CY1JF102J*	X	1k	1/16W	Metal Oxide	AA
R3080	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R3081	VRS-CY1JF101J*	X	100	1/16W	Metal Oxide	AA
R3082	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R3083	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R3084	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA
R3085	VRS-CY1JF103J*	X	10k	1/16W	Metal Oxide	AA

MISCELLANEOUS PARTS

P3001	QPLGZ0810CEZZ	X	Plug, 8Pin	AB
P3002	QPLGN0441CEZZ	X	Plug, 4Pin(RAV)	AA
P3003	QPLGN0441CEZZ	X	Plug, 4Pin(FAV)	AA
P3004	QPLGN0361CEZZ	X	Plug, 3Pin(WF)	
P3008	QPLGZ0810CEZZ	X	Plug, 8Pin	AB
P3009	QPLGZ0610CEZZ	X	Plug, 6Pin	AB
P3012	QPLGN0241CEZZ	X	Plug, 2Pin(AV)	AA
P3013	QPLGN0241CEZZ	X	Plug, 2Pin(AN)	AA

Ref. No.	Part No.	★	Description	Code

MISCELLANEOUS PARTS

SP301	VSP1205PB09WA	X	Speaker(L)
SP302	VSP1205PB09WA	X	Speaker(R)
	LHLDW1003PEZZ	X	Wire Holder, x2
	QCNW-A299WJZZ	X	Connecting Cord (K)
	QCNW-A530WJN1	X	Connecting Cord (AN)
	QCNW-A531WJN1	X	Connecting Cord (FAV)
	QCNW-A532WJN1	X	Connecting Cord (RAV)
	QCNW-A534WJN1	X	Connecting Cord (MTS)
	QCNW-A871WJZZ	X	Connecting Cord
	QCNW-A872WJZZ	X	Connecting Cord
	QCNW-A873WJZZ	X	Connecting Cord

SUPPLIED ACCESSORIES

ACCESSORIES

Ref. No.	Part No.	★	Description	Code
	RRMCGA108WJSA	X	Infrated R/C Unit	
	TGAN-0001GJZZ	X	Guarantee Card (20F630)	AB
	TiNS-A725WJZZ	X	Operation Manual (20F630)	
	TiNS-A747WJZZ	X	Operation Manual (CU20F630)	

ACCESSORIE*(NOT REPLACEMENT ITEM)*

	TCAUH3045GJZZ	-	Caution Card	—
	TCAUS3001GJZZ	-	Caution Card(CU20F630)	—
	TCAUS3002GJZZ	-	Caution Card(CU20F630)	—

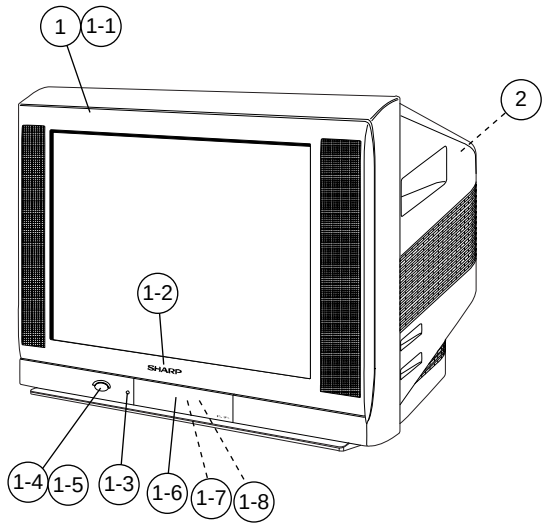
PACKING PARTS
NOT REPLACEMENT ITEM)

	SPAKCA696WJZZ	–	Packing Case	—
	SPAKPA055WJZZ	–	Wrapping Paper	—
	SPAKXA145WJZZ	–	Buffer Material	—
	SSAKA0101GJZZ	–	Polyethylene Bag	—

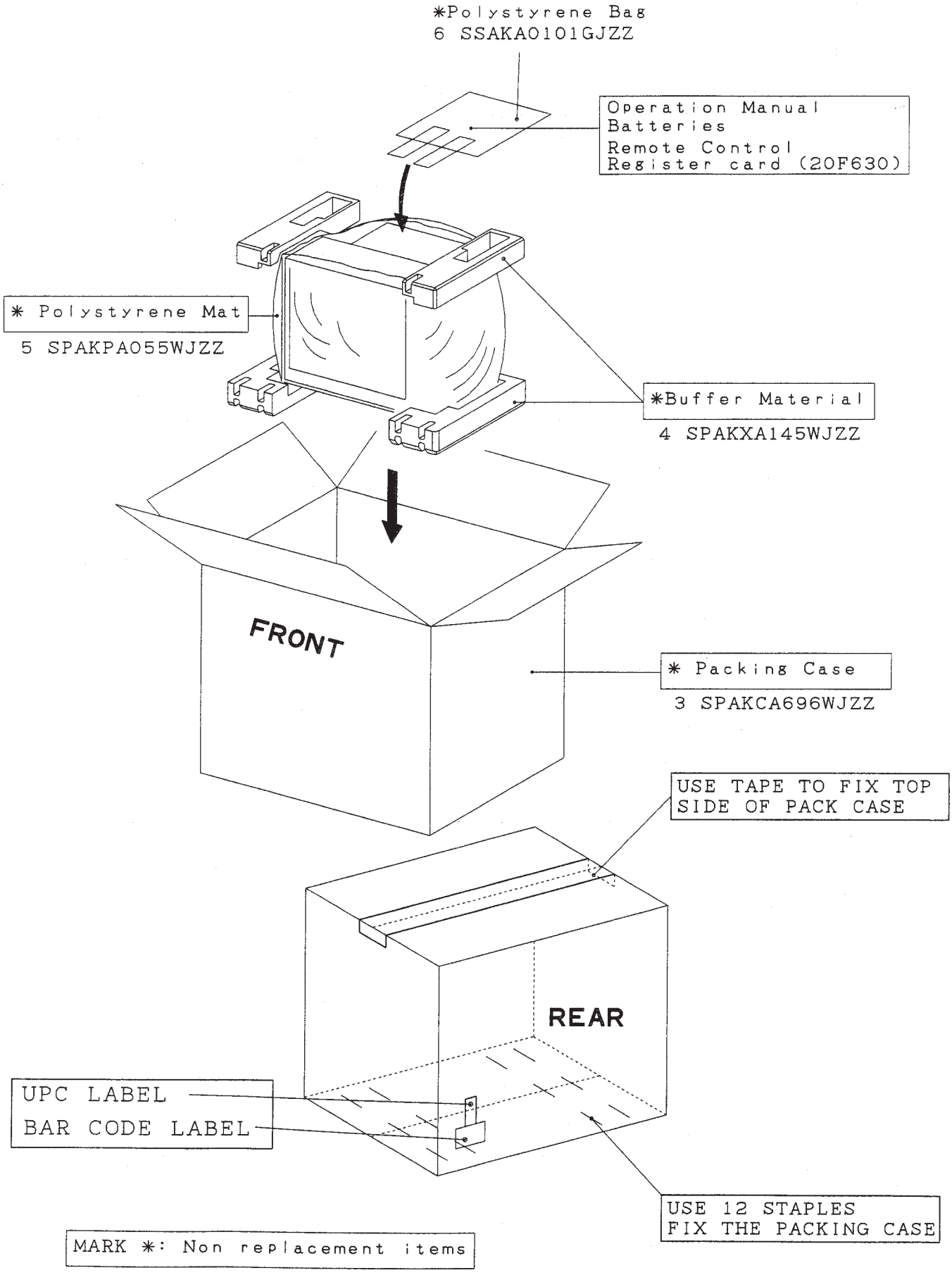
CABINET PARTS

Ref. No.	Part No.	★	Description	Code
1	CCABAA323WEH0	X	Front Cabinet Ass'y	
1-1	*Not Available*	–	Front Cabinet	—
1-2	HBDGB3155CESA	X	SHARP Badge	
1-3	HDECQA119WJSA	X	LED/RC Cover	
1-4	JBTN-A070WJKA	X	Power Button	
1-5	MSPRC0005PEFW	X	Power Button Spring	
1-6	GDORFA015WJKA	X	Door	
1-7	MSPRPA012WJFW	X	Door Spring	AB
1-8	HiNDPA194WJSA	X	Indication Plate	
2	GCABBA088WJKA	X	Rear Cabinet	

CABINET PARTS LOCATION



PACKING OF THE SET



MARK *: Non replacement items

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